FCC TEST REPORT
FCC ID:2BHF4-J30

Report Number..... :	ZKT-240724L8692E
Date of Test.....	Jun. 12, 2024 to Aug. 22, 2024
Date of issue ..... :	Aug.22, 2024
Total number of pages	70
Test Result ..... :	PASS
Testing Laboratory..... :	**Shenzhen ZKT Technology Co., Ltd.**
Address ..... :	1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China
Applicant's name ..... :	**Nanjing Huihuang Zhixing Technology Co., Ltd.**
Address ..... :	501-1, Building 5, No.18 Jialingjiang East Street, Jianye District，Nanjing, Jiangsu, China.
Manufacturer's name ..... :	**Nanjing Huihuang Zhixing Technology Co., Ltd.**
Address ..... :	501-1, Building 5, No.18 Jialingjiang East Street, Jianye District，Nanjing, Jiangsu, China.
Test specification:	
Standard ..... :	FCC CFR Title 47 Part 15 Subpart C Section 15.247 ANSI C63.10:2013
Test procedure..... :	/
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	TRF-EL-110_V0
Test Report Form(s) Originator .... :	ZKT Testing
Master TRF ..... :	Dated: 2020-01-06

This device described above has been tested by ZKT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.
This report shall not be reproduced except in full, without the written approval of ZKT, this document may be altered or revised by ZKT, personal only, and shall be noted in the revision of the document.

Product name ..... :	**J30 Cleaning Robot**
Trademark ..... :	辉煌智行 BIB ROBOTICS
Model/Type reference ..... :	J30,J30S
Ratings..... :	ADP:ModelABA071C-02200400C1401, AC Input 100-240VAC,DC Output 24V,4A for charging Battery:Input 21.9V DC for working

Testing procedure and testing location:

Testing Laboratory.....:	**Shenzhen ZKT Technology Co., Ltd.**
Address.....:	1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China
Tested by (name + signature).....:	Jim.Liu
Reviewer (name + signature).....:	Jackson.Fang
Approved (name + signature).....:	Lake Xie

Table of Contents

	Page
1. VERSION	5
2. SUMMARY OF TEST RESULTS	6
2.1 TEST FACILITY	7
2.2 MEASUREMENT UNCERTAINTY	7
3. GENERAL INFORMATION	8
3.1 GENERAL DESCRIPTION OF EUT	8
3.2 DESCRIPTION OF TEST MODES	9
3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	9
3.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)	9
3.5EQUIPMENTS LIST FOR ALL TEST ITEMS	10
4. EMC EMISSION TEST	12
4.1 CONDUCTED EMISSION MEASUREMENT	12
4.1.1 POWER LINE CONDUCTED EMISSION LIMITS	12
4.1.2 TEST PROCEDURE	12
4.1.3 DEVIATION FROM TEST STANDARD	12
4.1.4 TEST SETUP	13
4.1.5 EUT OPERATING CONDITIONS	13
4.2.1 RADIATED EMISSION LIMITS	16
4.2.2 TEST PROCEDURE	17
4.2.3 DEVIATION FROM TEST STANDARD	17
4.2.4 TEST SETUP	17
4.2.5 EUT OPERATING CONDITIONS	18
4.2.6 TEST RESULTS	18
5.RADIATED BAND EMISSIONMEASUREMENT	31
5.1 TEST REQUIREMENT:	31
5.2 TEST PROCEDURE	31
5.3 DEVIATION FROM TEST STANDARD	31
5.4 TEST SETUP	32
5.5 EUT OPERATING CONDITIONS	32
5.6 TEST RESULT	33
6.POWER SPECTRAL DENSITY TEST	36
6.1 APPLIED PROCEDURES / LIMIT	36
6.2 TEST PROCEDURE	36
6.3 DEVIATION FROM STANDARD	36
6.4 TEST SETUP	36
6.5 EUT OPERATION CONDITIONS	36
6.6 TEST RESULT	37

7. CHANNEL BANDWIDTH& 99% OCCUPY BANDWIDTH 46
7.1 APPLIED PROCEDURES / LIMIT 46
7.2 TEST PROCEDURE 46
7.3 DEVIATION FROM STANDARD 46
7.4 TEST SETUP 46
7.5 EUT OPERATION CONDITIONS 46
7.6 TEST RESULT 47
8.PEAK OUTPUT POWER TEST 56
8.1 APPLIED PROCEDURES/LIMIT 56
8.2 TEST PROCEDURE 56
8.3 DEVIATION FROM STANDARD 56
8.4 TEST SETUP 56
8.5 EUT OPERATION CONDITIONS 56
8.6 TEST RESULT 57
9. CONDUCTED BAND EDGE AND SPURIOUS EMISSION 58
9.1 APPLICABLE STANDARD 58
9.2 TEST PROCEDURE 58
9.3 DEVIATION FROM STANDARD 58
9.4 TEST SETUP 58
9.5 EUT OPERATION CONDITIONS 58
9.6 TEST RESULTS 58
10. DUTY CYCLE 66
10.1 APPLIED PROCEDURES / LIMIT 66
10.2 DEVIATION FROM STANDARD 66
10.3 TEST SETUP 66
11. ANTENNA REQUIREMENT 70
12. TEST SETUP PHOTO 70
13. EUT CONSTRUCTIONAL DETAILS 70

1. VERSION

Report No.	Version	Description	Approved
ZKT-240724L8692E	Rev.01	Initial issue of report	Aug.22, 2024

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Result	Remark
FCC part 15.203/15.247 (c)	Antenna requirement	PASS	
FCC part 15.207	AC Power Line Conducted Emission	PASS	
FCC part 15.247 (b)(3)	Conducted Peak Output Power	PASS	
FCC part 15.247 (a)(2)	Channel Bandwidth& 99% OCB	PASS	
FCC part 15.247 (e)	Power Spectral Density	PASS	
FCC part 15.247(d)	Band Edge	PASS	
FCC part 15.205/15.209	Spurious Emission	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

2.1 TEST FACILITY

Shenzhen ZKT Technology Co., Ltd.
Add. : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 692225
Designation Number: CN1299
IC Registered No.: 27033
CAB identifier: CN0110

2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ± U，where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2，providing a level of confidence of approximately 95 %。

No.	Item	Uncertainty
1	3m camber Radiated spurious emission(9KHz-30MHz)	U=4.5dB
2	3m camber Radiated spurious emission(30MHz-1GHz)	U=4.8dB
3	3m chamber Radiated spurious emission(1GHz-6GHz)	U=4.9dB
4	3m chamber Radiated spurious emission(6GHz-40GHz)	U=5.0dB
5	Conducted disturbance	U=3.2dB
6	RF Band Edge	U=1.68dB
7	RF power conducted	U=1.86dB
8	RF conducted Spurious Emission	U=2.2dB
9	RF Occupied Bandwidth	U=1.8KHz
10	RF Power Spectral Density	U=1.75dB
11	humidity uncertainty	U=5.3%
12	Temperature uncertainty	U=0.59℃

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Product Name:	J30 Cleaning Robot
Model No.:	J30,J30S
Model Different.:	all the models are electrical identical including the same software parameter , hardware design,same mechanical structure and design, the only difference is the model name, the J30 has no bracket, the J30S has a bracket .
Serial No.:	N/A
Sample ID	ZKT- 240724L8692E
Sample(s) Status:	Engineer sample
Channel numbers:	802.11b/802.11g /802.11n(HT20)/ 802.11n(HT40)
Channel separation:	5MHz
Modulation technology:	802.11b: Direct Sequence Spread Spectrum(DSSS) 802.11g/802.11n(HT20) /802.11n(HT40): Orthogonal Frequency Division Multiplexing(OFDM)
Antenna Type and Antenna gain:	802.11b/g/n: FPC Antenna Antenna gain: 2dBi
Worst Case:	2.4G WIFI 802.11n20
Power supply:	ADP:ModelABA071C-02200400C1401, AC Input 100-240VAC,DC Output 24V,4A Battery:DC 19.2V for working
SWITCHING POWER ADAPTER:	AC 100-240V, 50/60Hz

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

Note:
In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	**Frequency (MHz)**	
	802.11b/802.11g/802.11n(HT20)	802.11n(HT40)
Lowest channel	2412MHz	2422MHz
Middle channel	2437MHz	2437MHz
Highest channel	2462MHz	2452MHz

3.2 DESCRIPTION OF TEST MODES

Transmitting mode	Keep the EUT in continuously transmitting mode
Remark: During the test, the duty cycle >77%, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

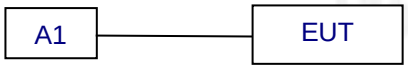
Mode	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)
Data rate	1Mbps	6Mbps	6.5Mbps	13Mbps

Test Software	ESPTest Tool
Power level setup	<17dBm

3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission

Radiated Emission



3.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
A1	power socket	BULL	N/A	N/A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	Note
N/A	N/A	N/A	N/A	N/A

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

3.5EQUIPMENTS LIST FOR ALL TEST ITEMS

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	LISN	R&S	ENV216	101471	N/A	Nov. 14, 2023	Nov. 13, 2024
2	LISN	CYBERTEK	EM5040A	E1850400149	N/A	Nov. 02, 2023	Nov. 01, 2024
3	Test Cable	N/A	C-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
4	Test Cable	N/A	C-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
5	Test Cable	N/A	C-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
6	EMI Test Receiver	R&S	ESCI3	101393	4.42 SP3	Nov. 02, 2023	Nov. 01, 2024
7	Triple-Loop Antenna	N/A	RF300	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
8	Absorbing Clamp	DZ	ZN23201	15034	N/A	Nov. 07, 2023	Nov. 06, 2024
9	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	N/A	\	\

Radiation Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	9020A	MY55370835	A.17.05	Nov. 02, 2023	Nov. 01, 2024
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Nov. 02, 2023	Nov. 01, 2024
3	EMI Test Receiver (9kHz-7GHz)	R&S	ESCI7	101169	4.32	Nov. 02, 2023	Nov. 01, 2024
4	Bilog Antenna (30MHz-1500MHz)	Schwarzbeck	VULB9168	N/A	N/A	Nov. 13, 2023	Nov. 12, 2024
5	Horn Antenna (1GHz-18GHz)	Agilent	AH-118	071145	N/A	Nov. 13, 2023	Nov. 12, 2024
6	Horn Antenna (15GHz-40GHz)	A.H.System	SAS-574	588	N/A	Nov. 13, 2023	Nov. 12, 2024
7	Loop Antenna	TESEQ	HLA6121	58357	N/A	Nov. 16, 2023	Nov. 15, 2024
8	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	060747	N/A	Nov. 02, 2023	Nov. 01, 2024
9	Amplifier (1GHz-26.5GHz)	Agilent	8449B	3008A00315	N/A	Nov. 02, 2023	Nov. 01, 2024
10	Amplifier (500MHz-40GHz)	Tonscend	DLE-161	097	N/A	Nov. 02, 2023	Nov. 01, 2024
11	Test Cable	N/A	R-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
12	Test Cable	N/A	R-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
13	Test Cable	N/A	R-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
14	Test Cable	N/A	RF-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
15	Test Cable	N/A	RF-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024

16	Test Cable	N/A	RF-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
17	ESG Signal Generator	Agilent	E4421B	N/A	B.03.84	Nov. 02, 2023	Nov. 01, 2024
18	Signal Generator	Agilent	N5182A	N/A	A.01.87	Nov. 02, 2023	Nov. 01, 2024
19	Magnetic Field Probe Tester	Narda	ELT-400	0-0344	N/A	Nov. 16, 2023	Nov. 15, 2024
20	Wideband Radio Communication Test	R&S	CMW500	106504	V 3.7.22	Nov. 02, 2023	Nov. 01, 2024
21	MWRF Power Meter Test system	MW	MW100-RF CB	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
22	D.C. Power Supply	LongWei	TPR-6405D	N/A	N/A	\	\
23	EMC Software	Frad	EZ-EMC	Ver.EMC-CO N 3A1.1	N/A	\	\
24	RF Software	MW	MTS8310	V2.0.0.0	N/A	\	\
25	Turntable	MF	MF-7802BS	N/A	N/A	\	\
26	Antenna tower	MF	MF-7802BS	N/A	N/A	\	\

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

4.1.1 POWER LINE CONDUCTED EMISSION Limits

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

(1) *Decreases with the logarithm of the frequency.

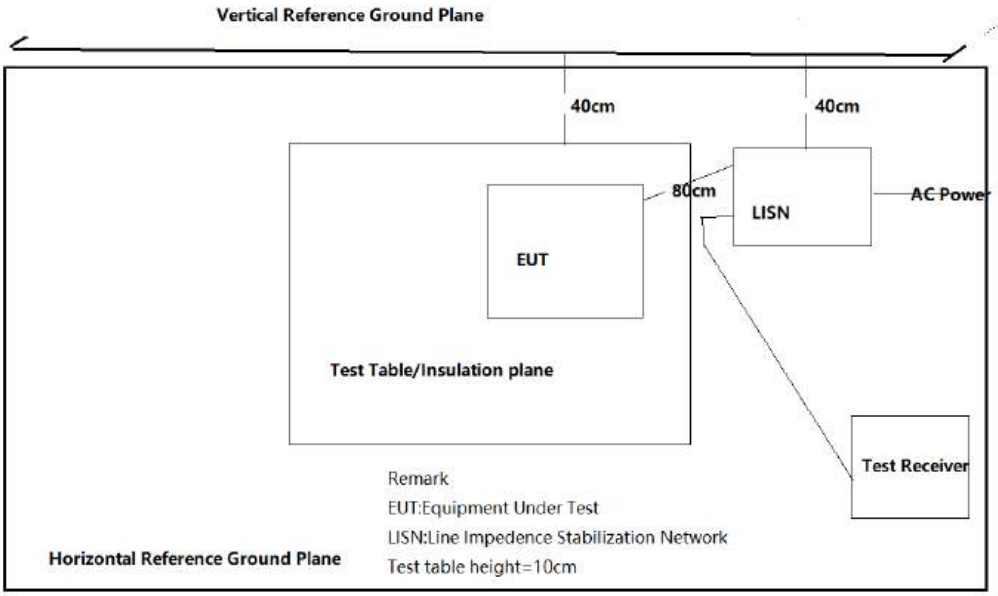
4.1.2 TEST PROCEDURE

a. The EUT was placed 0.1 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation

4.1.4 TEST SETUP



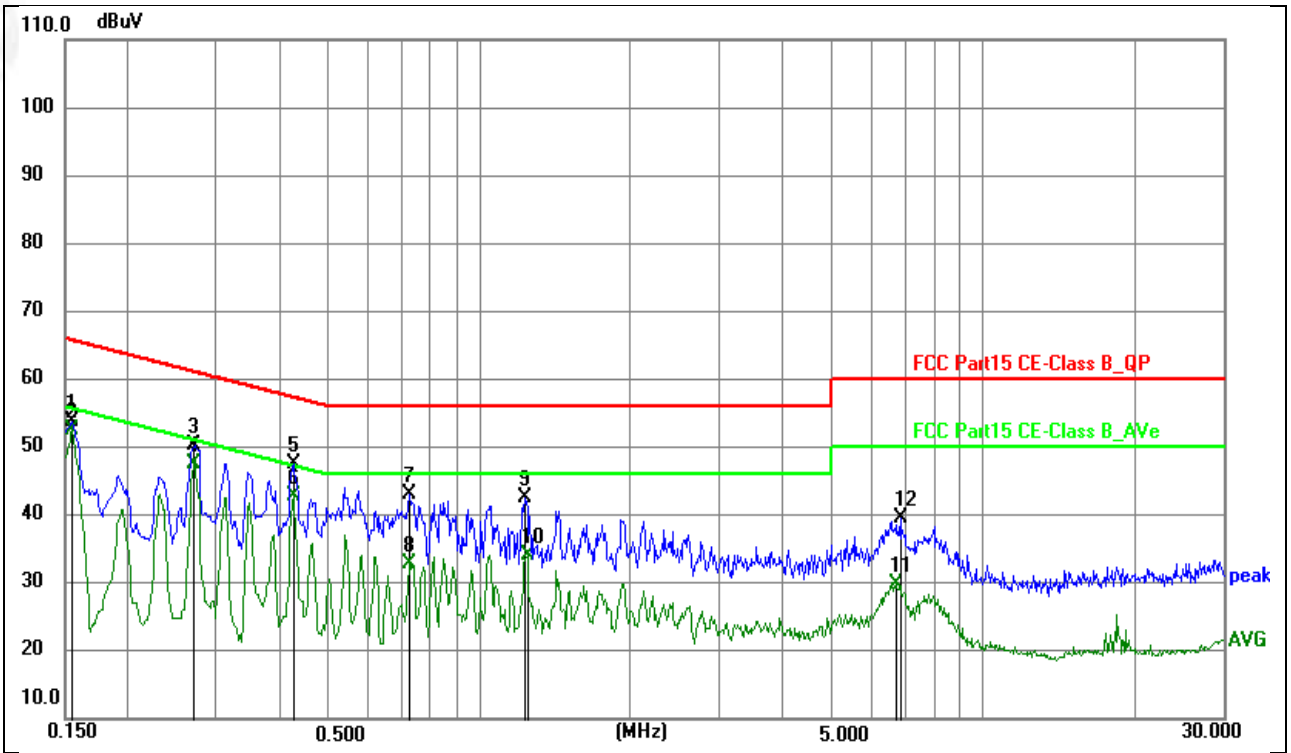
4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

We pretest AC 120V and AC 230V, the worst voltage was AC 120V and the data recording in the report.

4.1.6 Test Result

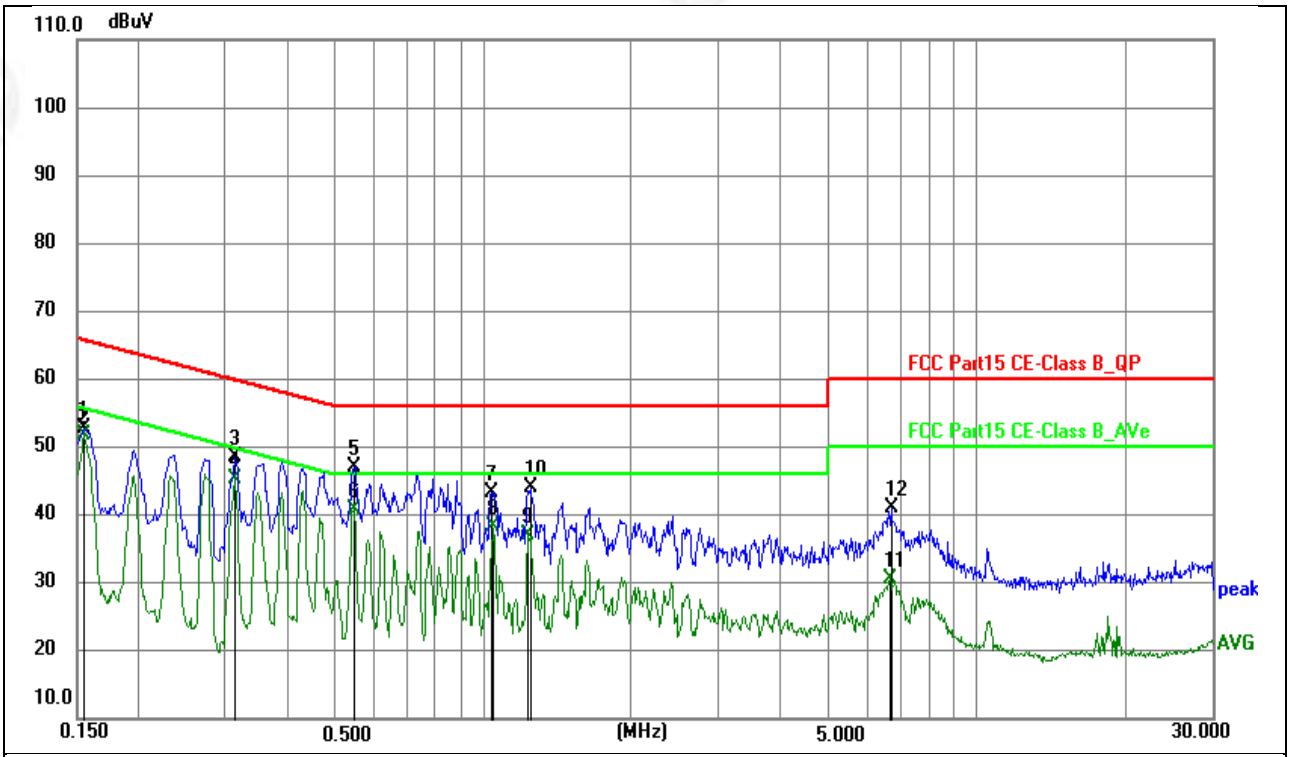
Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	L
Test Voltage:	AC 120V/60Hz		



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	
1	0.1548	33.66	20.12	53.78	65.74	-11.96	QP
2	0.1548	32.40	20.12	52.52	55.74	-3.22	AVG
3	0.2714	30.01	20.25	50.26	61.07	-10.81	QP
4	0.2714	27.20	20.25	47.45	51.07	-3.62	AVG
5	0.4260	27.40	20.13	47.53	57.33	-9.80	QP
6	0.4260	22.62	20.13	42.75	47.33	-4.58	AVG
7	0.7235	22.89	20.08	42.97	56.00	-13.03	QP
8	0.7235	12.83	20.08	32.91	46.00	-13.09	AVG
9	1.2291	22.54	20.07	42.61	56.00	-13.39	QP
10	1.2422	13.89	20.07	33.96	46.00	-12.04	AVG
11	6.6977	9.71	20.00	29.71	50.00	-20.29	AVG
12	6.8412	19.51	20.00	39.51	60.00	-20.49	QP

Notes:
1.An initial pre-scan was performed on the line and neutral lines with peak detector.
2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3.Mesurement Level = Reading level + Correct Factor

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	N
Test Voltage:	AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1548	32.73	20.12	52.85	65.74	-12.89	QP
2	0.1548	31.56	20.12	51.68	55.74	-4.06	AVG
3	0.3132	28.13	20.35	48.48	59.89	-11.41	QP
4	0.3132	25.01	20.35	45.36	49.89	-4.53	AVG
5	0.5464	27.00	20.08	47.08	56.00	-8.92	QP
6	0.5464	20.66	20.08	40.74	46.00	-5.26	AVG
7	1.0374	23.20	20.09	43.29	56.00	-12.71	QP
8	1.0430	18.09	20.09	38.18	46.00	-7.82	AVG
9	1.2291	16.90	20.07	36.97	46.00	-9.03	AVG
10	1.2422	23.87	20.07	43.94	56.00	-12.06	QP
11	6.6623	10.58	20.00	30.58	50.00	-19.42	AVG
12	6.6977	20.96	20.00	40.96	60.00	-19.04	QP

Notes:
1.An initial pre-scan was performed on the line and neutral lines with peak detector.
2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3.Mesurement Level = Reading level + Correct Factor

4.2 RADIATED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.209
Test Method:	ANSI C63.10:2013
Test Frequency Range:	9kHz to 25GHz
Test site:	Measurement Distance: 3m
Receiver setup:	

Frequency	Detector	RBW	VBW	Value
9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

4.2.1 RADIATED EMISSION LIMITS

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

4.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

a. The EUT was placed on the top of a rotating table 0.1 meters above the ground at a 3 meter semi-anechoiccamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of avariable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum valueof the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned toheights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could bestopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dBmargin would be re-tested one by one using peak, quasi-peak or average method as specified and then reportedin a data sheet.

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber andchange form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).
h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel

Note:

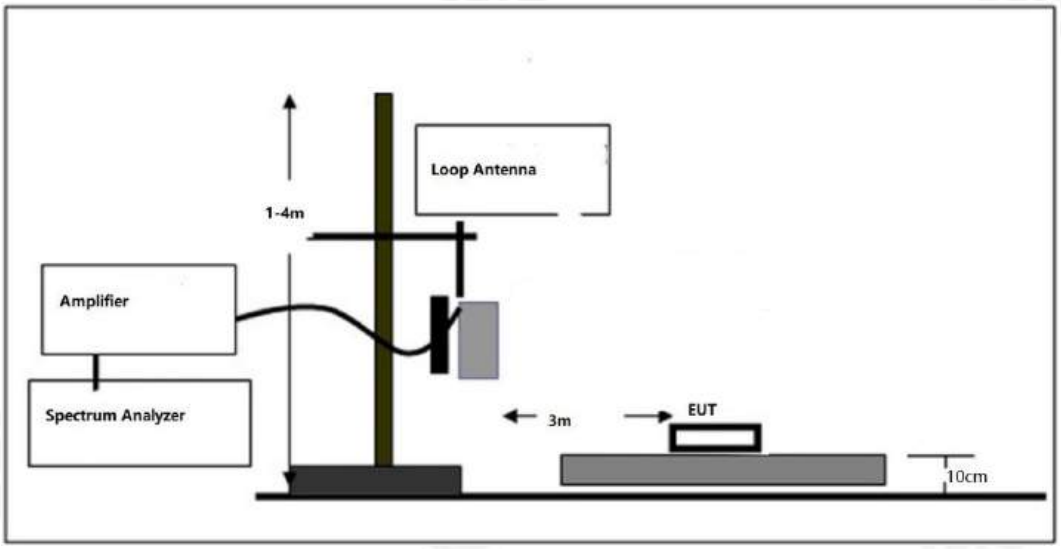
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

4.2.3 DEVIATION FROM TEST STANDARD

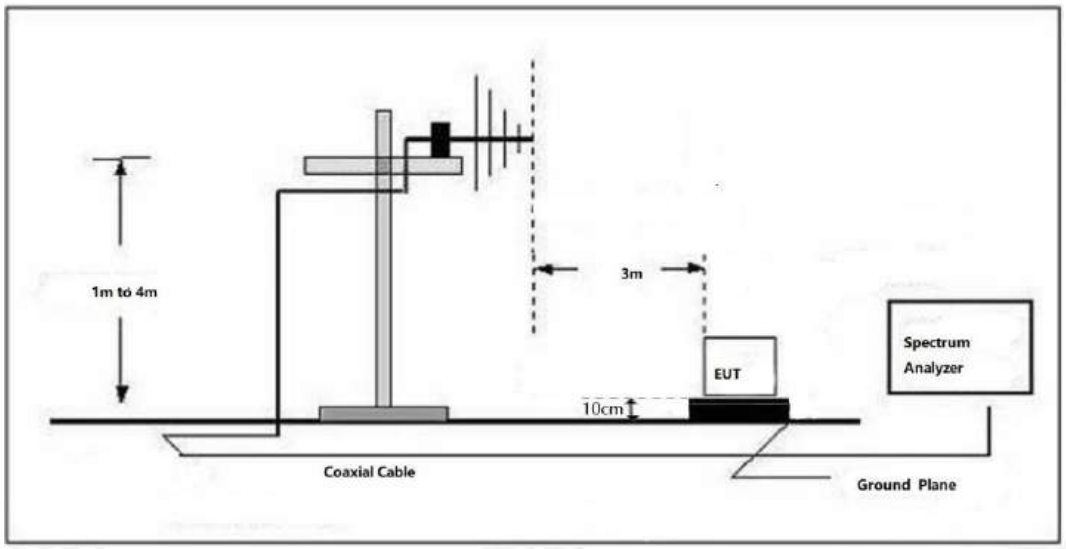
No deviation

4.2.4 TEST SETUP

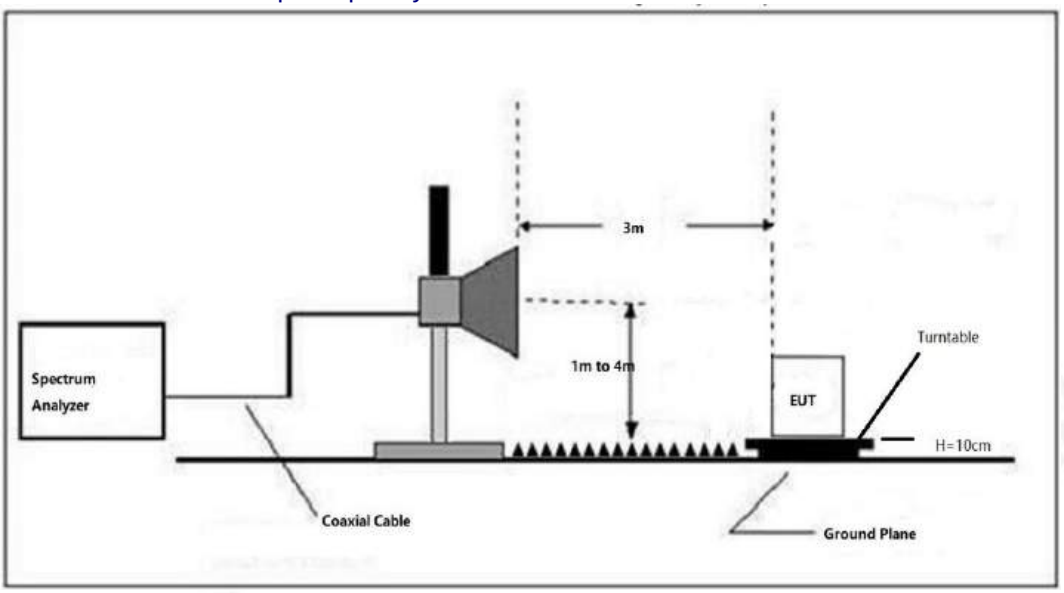
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



4.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

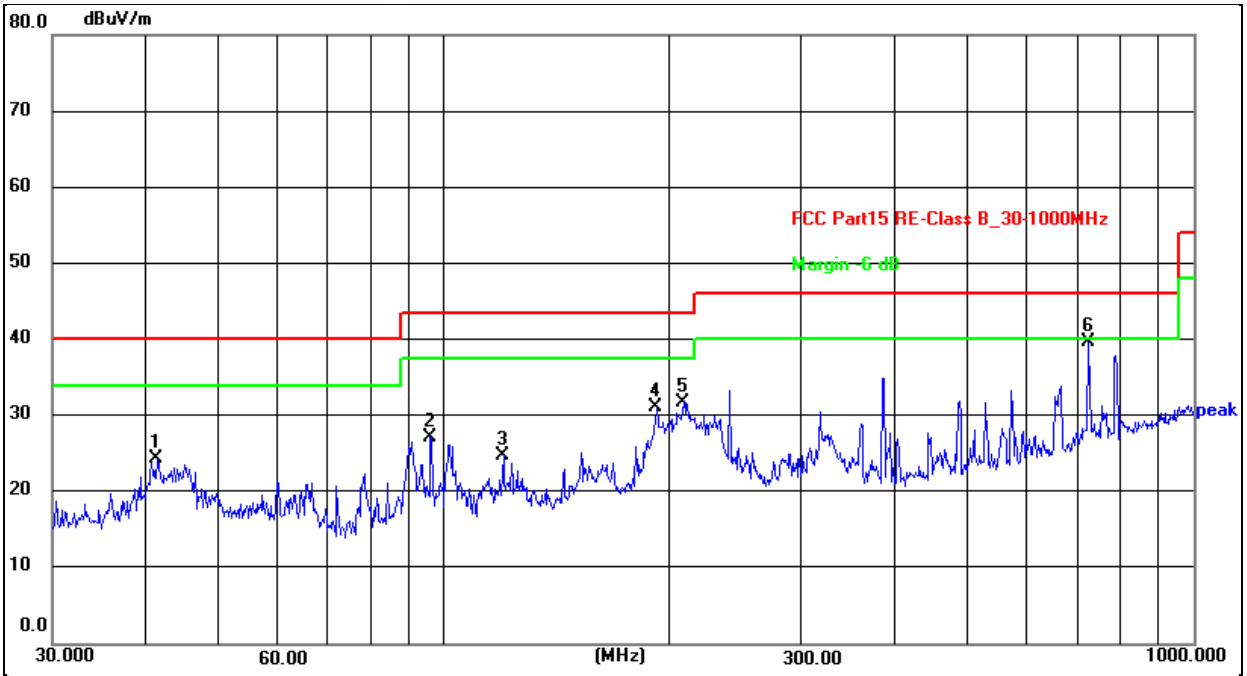
4.2.6 TEST RESULTS

Between 9KHz – 30MHz

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

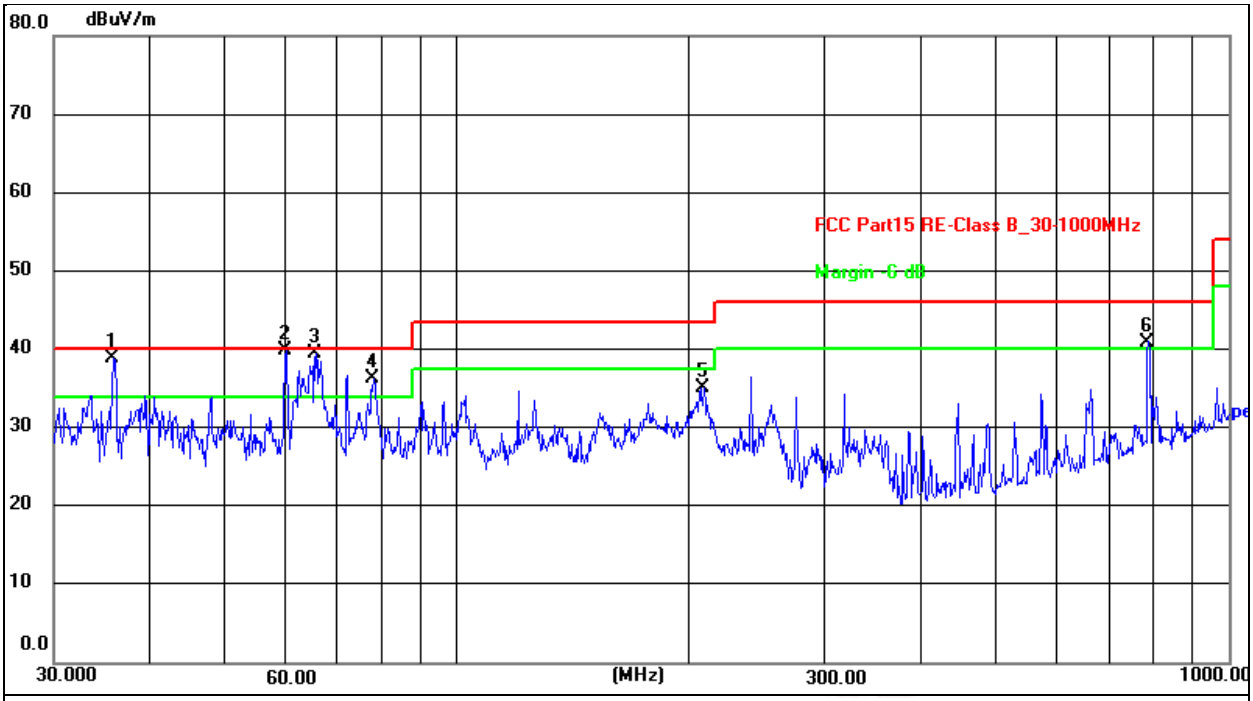
Between 30MHz – 1GHz

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz	Test Mode	Working
The 802.11n20(MIMO) low channel is worst case.			



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg)	
1	41.4215	40.21	-15.92	24.29	40.00	-15.71	200	280	QP
2	96.0986	45.49	-18.32	27.17	43.50	-16.33	200	360	QP
3	119.8556	40.91	-16.08	24.83	43.50	-18.67	100	360	QP
4	191.7450	48.57	-17.50	31.07	43.50	-12.43	100	98	QP
5	208.5803	49.62	-17.78	31.84	43.50	-11.66	100	308	QP
6	724.0272	44.21	-4.47	39.74	46.00	-6.26	100	230	QP

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz	Test Mode	Working
The 802.11n20(MIMO) low channel is worst case.			



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg)	
1	35.8746	55.17	-16.35	38.82	40.00	-1.18	100	357	QP
2	60.0691	56.44	-16.55	39.89	40.00	-0.11	200	349	QP
3	65.5727	56.89	-17.33	39.56	40.00	-0.44	200	335	QP
4	77.8654	55.57	-19.19	36.38	40.00	-3.62	100	282	QP
5	208.5803	52.98	-17.78	35.20	43.50	-8.30	100	170	QP
6	785.0935	44.16	-3.18	40.98	46.00	-5.02	200	28	QP

Remarks:
1.Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2.The emission levels of other frequencies are very lower than the limit and not show in test report.
3.The test data shows only the worst case 802.11 n20.

1GHz~25GHz
ANT1

802.11b

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2412MHz									
V	4824.00	52.95	30.55	5.77	24.66	52.83	74.00	-21.17	PK
V	4824.00	44.12	30.55	5.77	24.66	44.00	54.00	-10.00	AV
V	7236.00	52.18	30.33	6.32	24.55	52.72	74.00	-21.28	PK
V	7236.00	43.40	30.33	6.32	24.55	43.94	54.00	-10.06	AV
V	9648.00	50.14	30.85	7.45	24.69	51.43	74.00	-22.57	PK
V	9648.00	44.11	30.85	7.45	24.69	45.40	54.00	-8.60	AV
V	12060.00	53.03	31.02	8.99	25.57	56.57	74.00	-17.43	PK
V	12060.00	43.16	31.02	8.99	25.57	46.70	54.00	-7.30	AV
H	4824.00	50.68	30.55	5.77	24.66	50.56	74.00	-23.44	PK
H	4824.00	43.89	30.55	5.77	24.66	43.77	54.00	-10.23	AV
H	7236.00	53.05	30.33	6.32	24.55	53.59	74.00	-20.41	PK
H	7236.00	43.76	30.33	6.32	24.55	44.30	54.00	-9.70	AV
H	9648.00	51.60	30.85	7.45	24.69	52.89	74.00	-21.11	PK
H	9648.00	43.43	30.85	7.45	24.69	44.72	54.00	-9.28	AV
H	12060.00	51.03	31.02	8.99	25.57	54.57	74.00	-19.43	PK
H	12060.00	43.29	31.02	8.99	25.57	46.83	54.00	-7.17	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Middle Channel:2437MHz									
V	4874.00	53.07	30.55	5.77	24.66	52.95	74.00	-21.05	PK
V	4874.00	43.63	30.55	5.77	24.66	43.51	54.00	-10.49	AV
V	7311.00	52.23	30.33	6.32	24.55	52.77	74.00	-21.23	PK
V	7311.00	43.31	30.33	6.32	24.55	43.85	54.00	-10.15	AV
V	9748.00	50.02	30.85	7.45	24.69	51.31	74.00	-22.69	PK
V	9748.00	43.51	30.85	7.45	24.69	44.80	54.00	-9.20	AV
V	12185.00	52.64	31.02	8.99	25.57	56.18	74.00	-17.82	PK
V	12185.00	43.53	31.02	8.99	25.57	47.07	54.00	-6.93	AV
H	4874.00	51.79	30.55	5.77	24.66	51.67	74.00	-22.33	PK
H	4874.00	43.67	30.55	5.77	24.66	43.55	54.00	-10.45	AV
H	7311.00	51.16	30.33	6.32	24.55	51.70	74.00	-22.30	PK
H	7311.00	43.12	30.33	6.32	24.55	43.66	54.00	-10.34	AV
H	9748.00	51.78	30.85	7.45	24.69	53.07	74.00	-20.93	PK
H	9748.00	43.11	30.85	7.45	24.69	44.40	54.00	-9.60	AV
H	12185.00	52.67	31.02	8.99	25.57	56.21	74.00	-17.79	PK
H	12185.00	44.30	31.02	8.99	25.57	47.84	54.00	-6.16	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel:2462MHz									
V	4924.00	50.90	30.55	5.77	24.66	50.78	74.00	-23.22	PK
V	4924.00	44.42	30.55	5.77	24.66	44.30	54.00	-9.70	AV
V	7386.00	51.96	30.33	6.32	24.55	52.50	74.00	-21.50	PK
V	7386.00	43.13	30.33	6.32	24.55	43.67	54.00	-10.33	AV
V	9848.00	50.50	30.85	7.45	24.69	51.79	74.00	-22.21	PK
V	9848.00	43.96	30.85	7.45	24.69	45.25	54.00	-8.75	AV
V	12310.00	52.30	31.02	8.99	25.57	55.84	74.00	-18.16	PK
V	12310.00	43.29	31.02	8.99	25.57	46.83	54.00	-7.17	AV
H	4924.00	54.42	30.55	5.77	24.66	54.30	74.00	-19.70	PK
H	4924.00	42.86	30.55	5.77	24.66	42.74	54.00	-11.26	AV
H	7386.00	52.34	30.33	6.32	24.55	52.88	74.00	-21.12	PK
H	7386.00	43.98	30.33	6.32	24.55	44.52	54.00	-9.48	AV
H	9848.00	50.77	30.85	7.45	24.69	52.06	74.00	-21.94	PK
H	9848.00	43.54	30.85	7.45	24.69	44.83	54.00	-9.17	AV
H	12310.00	51.55	31.02	8.99	25.57	55.09	74.00	-18.91	PK
H	12310.00	43.95	31.02	8.99	25.57	47.49	54.00	-6.51	AV

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
4. The test data shows only the worst case.

802.11g

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2412MHz									
V	4824.00	50.43	30.55	5.77	24.66	50.31	74.00	-23.69	PK
V	4824.00	43.28	30.55	5.77	24.66	43.16	54.00	-10.84	AV
V	7236.00	52.30	30.33	6.32	24.55	52.84	74.00	-21.16	PK
V	7236.00	42.61	30.33	6.32	24.55	43.15	54.00	-10.85	AV
V	9648.00	53.27	30.85	7.45	24.69	54.56	74.00	-19.44	PK
V	9648.00	43.64	30.85	7.45	24.69	44.93	54.00	-9.07	AV
V	12060.00	50.52	31.02	8.99	25.57	54.06	74.00	-19.94	PK
V	12060.00	42.72	31.02	8.99	25.57	46.26	54.00	-7.74	AV
H	4824.00	51.94	30.55	5.77	24.66	51.82	74.00	-22.18	PK
H	4824.00	43.10	30.55	5.77	24.66	42.98	54.00	-11.02	AV
H	7236.00	51.17	30.33	6.32	24.55	51.71	74.00	-22.29	PK
H	7236.00	43.51	30.33	6.32	24.55	44.05	54.00	-9.95	AV
H	9648.00	53.44	30.85	7.45	24.69	54.73	74.00	-19.27	PK
H	9648.00	43.10	30.85	7.45	24.69	44.39	54.00	-9.61	AV
H	12060.00	54.20	31.02	8.99	25.57	57.74	74.00	-16.26	PK
H	12060.00	43.23	31.02	8.99	25.57	46.77	54.00	-7.23	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Middle Channel:2437MHz									
V	4874.00	51.63	30.55	5.77	24.66	51.51	74.00	-22.49	PK
V	4874.00	43.90	30.55	5.77	24.66	43.78	54.00	-10.22	AV
V	7311.00	52.66	30.33	6.32	24.55	53.20	74.00	-20.80	PK
V	7311.00	43.33	30.33	6.32	24.55	43.87	54.00	-10.13	AV
V	9748.00	51.00	30.85	7.45	24.69	52.29	74.00	-21.71	PK
V	9748.00	43.03	30.85	7.45	24.69	44.32	54.00	-9.68	AV
V	12185.00	55.00	31.02	8.99	25.57	58.54	74.00	-15.46	PK
V	12185.00	42.83	31.02	8.99	25.57	46.37	54.00	-7.63	AV
H	4874.00	54.58	30.55	5.77	24.66	54.46	74.00	-19.54	PK
H	4874.00	44.02	30.55	5.77	24.66	43.90	54.00	-10.10	AV
H	7311.00	50.72	30.33	6.32	24.55	51.26	74.00	-22.74	PK
H	7311.00	43.30	30.33	6.32	24.55	43.84	54.00	-10.16	AV
H	9748.00	52.44	30.85	7.45	24.69	53.73	74.00	-20.27	PK
H	9748.00	43.87	30.85	7.45	24.69	45.16	54.00	-8.84	AV
H	12185.00	54.49	31.02	8.99	25.57	58.03	74.00	-15.97	PK
H	12185.00	43.96	31.02	8.99	25.57	47.50	54.00	-6.50	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel:2462MHz									
V	4924.00	52.25	30.55	5.77	24.66	52.13	74.00	-21.87	PK
V	4924.00	43.73	30.55	5.77	24.66	43.61	54.00	-10.39	AV
V	7386.00	53.58	30.33	6.32	24.55	54.12	74.00	-19.88	PK
V	7386.00	43.16	30.33	6.32	24.55	43.70	54.00	-10.30	AV
V	9848.00	52.18	30.85	7.45	24.69	53.47	74.00	-20.53	PK
V	9848.00	43.44	30.85	7.45	24.69	44.73	54.00	-9.27	AV
V	12310.00	51.25	31.02	8.99	25.57	54.79	74.00	-19.21	PK
V	12310.00	43.54	31.02	8.99	25.57	47.08	54.00	-6.92	AV
H	4924.00	50.91	30.55	5.77	24.66	50.79	74.00	-23.21	PK
H	4924.00	43.22	30.55	5.77	24.66	43.10	54.00	-10.90	AV
H	7386.00	51.05	30.33	6.32	24.55	51.59	74.00	-22.41	PK
H	7386.00	43.70	30.33	6.32	24.55	44.24	54.00	-9.76	AV
H	9848.00	54.39	30.85	7.45	24.69	55.68	74.00	-18.32	PK
H	9848.00	43.79	30.85	7.45	24.69	45.08	54.00	-8.92	AV
H	12310.00	53.22	31.02	8.99	25.57	56.76	74.00	-17.24	PK
H	12310.00	43.64	31.02	8.99	25.57	47.18	54.00	-6.82	AV

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
4. The test data shows only the worst case.

ANT2

802.11b

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2412MHz									
V	4824.00	53.31	30.55	5.77	24.66	53.19	74.00	-20.81	PK
V	4824.00	44.51	30.55	5.77	24.66	44.39	54.00	-9.61	AV
V	7236.00	51.70	30.33	6.32	24.55	52.24	74.00	-21.76	PK
V	7236.00	43.74	30.33	6.32	24.55	44.28	54.00	-9.72	AV
V	9648.00	49.98	30.85	7.45	24.69	51.27	74.00	-22.73	PK
V	9648.00	43.78	30.85	7.45	24.69	45.07	54.00	-8.93	AV
V	12060.00	53.42	31.02	8.99	25.57	56.96	74.00	-17.04	PK
V	12060.00	43.00	31.02	8.99	25.57	46.54	54.00	-7.46	AV
H	4824.00	50.59	30.55	5.77	24.66	50.47	74.00	-23.53	PK
H	4824.00	44.26	30.55	5.77	24.66	44.14	54.00	-9.86	AV
H	7236.00	52.76	30.33	6.32	24.55	53.30	74.00	-20.70	PK
H	7236.00	44.22	30.33	6.32	24.55	44.76	54.00	-9.24	AV
H	9648.00	51.22	30.85	7.45	24.69	52.51	74.00	-21.49	PK
H	9648.00	43.08	30.85	7.45	24.69	44.37	54.00	-9.63	AV
H	12060.00	50.71	31.02	8.99	25.57	54.25	74.00	-19.75	PK
H	12060.00	43.31	31.02	8.99	25.57	46.85	54.00	-7.15	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Middle Channel:2437MHz									
V	4874.00	52.86	30.55	5.77	24.66	52.74	74.00	-21.26	PK
V	4874.00	43.40	30.55	5.77	24.66	43.28	54.00	-10.72	AV
V	7311.00	52.00	30.33	6.32	24.55	52.54	74.00	-21.46	PK
V	7311.00	43.12	30.33	6.32	24.55	43.66	54.00	-10.34	AV
V	9748.00	50.27	30.85	7.45	24.69	51.56	74.00	-22.44	PK
V	9748.00	43.61	30.85	7.45	24.69	44.90	54.00	-9.10	AV
V	12185.00	52.39	31.02	8.99	25.57	55.93	74.00	-18.07	PK
V	12185.00	43.25	31.02	8.99	25.57	46.79	54.00	-7.21	AV
H	4874.00	51.32	30.55	5.77	24.66	51.20	74.00	-22.80	PK
H	4874.00	43.35	30.55	5.77	24.66	43.23	54.00	-10.77	AV
H	7311.00	50.95	30.33	6.32	24.55	51.49	74.00	-22.51	PK
H	7311.00	42.68	30.33	6.32	24.55	43.22	54.00	-10.78	AV
H	9748.00	51.39	30.85	7.45	24.69	52.68	74.00	-21.32	PK
H	9748.00	42.83	30.85	7.45	24.69	44.12	54.00	-9.88	AV
H	12185.00	52.75	31.02	8.99	25.57	56.29	74.00	-17.71	PK
H	12185.00	44.75	31.02	8.99	25.57	48.29	54.00	-5.71	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel:2462MHz									
V	4924.00	51.31	30.55	5.77	24.66	51.19	74.00	-22.81	PK
V	4924.00	44.26	30.55	5.77	24.66	44.14	54.00	-9.86	AV
V	7386.00	51.48	30.33	6.32	24.55	52.02	74.00	-21.98	PK
V	7386.00	42.91	30.33	6.32	24.55	43.45	54.00	-10.55	AV
V	9848.00	50.70	30.85	7.45	24.69	51.99	74.00	-22.01	PK
V	9848.00	44.12	30.85	7.45	24.69	45.41	54.00	-8.59	AV
V	12310.00	51.80	31.02	8.99	25.57	55.34	74.00	-18.66	PK
V	12310.00	42.89	31.02	8.99	25.57	46.43	54.00	-7.57	AV
H	4924.00	53.95	30.55	5.77	24.66	53.83	74.00	-20.17	PK
H	4924.00	42.49	30.55	5.77	24.66	42.37	54.00	-11.63	AV
H	7386.00	52.75	30.33	6.32	24.55	53.29	74.00	-20.71	PK
H	7386.00	43.82	30.33	6.32	24.55	44.36	54.00	-9.64	AV
H	9848.00	50.73	30.85	7.45	24.69	52.02	74.00	-21.98	PK
H	9848.00	43.75	30.85	7.45	24.69	45.04	54.00	-8.96	AV
H	12310.00	51.35	31.02	8.99	25.57	54.89	74.00	-19.11	PK
H	12310.00	43.50	31.02	8.99	25.57	47.04	54.00	-6.96	AV

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
4. The test data shows only the worst case.

802.11g

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2412MHz									
V	4824.00	50.78	30.55	5.77	24.66	50.66	74.00	-23.34	PK
V	4824.00	43.57	30.55	5.77	24.66	43.45	54.00	-10.55	AV
V	7236.00	52.18	30.33	6.32	24.55	52.72	74.00	-21.28	PK
V	7236.00	42.58	30.33	6.32	24.55	43.12	54.00	-10.88	AV
V	9648.00	53.56	30.85	7.45	24.69	54.85	74.00	-19.15	PK
V	9648.00	43.39	30.85	7.45	24.69	44.68	54.00	-9.32	AV
V	12060.00	50.38	31.02	8.99	25.57	53.92	74.00	-20.08	PK
V	12060.00	42.36	31.02	8.99	25.57	45.90	54.00	-8.10	AV
H	4824.00	51.61	30.55	5.77	24.66	51.49	74.00	-22.51	PK
H	4824.00	43.27	30.55	5.77	24.66	43.15	54.00	-10.85	AV
H	7236.00	51.42	30.33	6.32	24.55	51.96	74.00	-22.04	PK
H	7236.00	43.06	30.33	6.32	24.55	43.60	54.00	-10.40	AV
H	9648.00	53.31	30.85	7.45	24.69	54.60	74.00	-19.40	PK
H	9648.00	42.73	30.85	7.45	24.69	44.02	54.00	-9.98	AV
H	12060.00	54.07	31.02	8.99	25.57	57.61	74.00	-16.39	PK
H	12060.00	42.81	31.02	8.99	25.57	46.35	54.00	-7.65	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Middle Channel:2437MHz									
V	4874.00	51.22	30.55	5.77	24.66	51.10	74.00	-22.90	PK
V	4874.00	43.48	30.55	5.77	24.66	43.36	54.00	-10.64	AV
V	7311.00	53.10	30.33	6.32	24.55	53.64	74.00	-20.36	PK
V	7311.00	43.12	30.33	6.32	24.55	43.66	54.00	-10.34	AV
V	9748.00	51.30	30.85	7.45	24.69	52.59	74.00	-21.41	PK
V	9748.00	42.84	30.85	7.45	24.69	44.13	54.00	-9.87	AV
V	12185.00	54.60	31.02	8.99	25.57	58.14	74.00	-15.86	PK
V	12185.00	43.02	31.02	8.99	25.57	46.56	54.00	-7.44	AV
H	4874.00	54.90	30.55	5.77	24.66	54.78	74.00	-19.22	PK
H	4874.00	43.68	30.55	5.77	24.66	43.56	54.00	-10.44	AV
H	7311.00	50.27	30.33	6.32	24.55	50.81	74.00	-23.19	PK
H	7311.00	43.44	30.33	6.32	24.55	43.98	54.00	-10.02	AV
H	9748.00	52.03	30.85	7.45	24.69	53.32	74.00	-20.68	PK
H	9748.00	43.43	30.85	7.45	24.69	44.72	54.00	-9.28	AV
H	12185.00	54.12	31.02	8.99	25.57	57.66	74.00	-16.34	PK
H	12185.00	44.26	31.02	8.99	25.57	47.80	54.00	-6.20	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel:2462MHz									
V	4924.00	52.69	30.55	5.77	24.66	52.57	74.00	-21.43	PK
V	4924.00	43.24	30.55	5.77	24.66	43.12	54.00	-10.88	AV
V	7386.00	53.94	30.33	6.32	24.55	54.48	74.00	-19.52	PK
V	7386.00	43.51	30.33	6.32	24.55	44.05	54.00	-9.95	AV
V	9848.00	51.77	30.85	7.45	24.69	53.06	74.00	-20.94	PK
V	9848.00	43.44	30.85	7.45	24.69	44.73	54.00	-9.27	AV
V	12310.00	50.81	31.02	8.99	25.57	54.35	74.00	-19.65	PK
V	12310.00	43.29	31.02	8.99	25.57	46.83	54.00	-7.17	AV
H	4924.00	51.25	30.55	5.77	24.66	51.13	74.00	-22.87	PK
H	4924.00	43.20	30.55	5.77	24.66	43.08	54.00	-10.92	AV
H	7386.00	51.36	30.33	6.32	24.55	51.90	74.00	-22.10	PK
H	7386.00	43.43	30.33	6.32	24.55	43.97	54.00	-10.03	AV
H	9848.00	53.91	30.85	7.45	24.69	55.20	74.00	-18.80	PK
H	9848.00	44.24	30.85	7.45	24.69	45.53	54.00	-8.47	AV
H	12310.00	53.09	31.02	8.99	25.57	56.63	74.00	-17.37	PK
H	12310.00	43.39	31.02	8.99	25.57	46.93	54.00	-7.07	AV

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
4. The test data shows only the worst case.

802.11n20(MIMO)

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2412MHz									
V	4824.00	54.84	30.55	5.77	24.66	54.72	74.00	-19.28	PK
V	4824.00	43.26	30.55	5.77	24.66	43.14	54.00	-10.86	AV
V	7236.00	50.32	30.33	6.32	24.55	50.86	74.00	-23.14	PK
V	7236.00	43.20	30.33	6.32	24.55	43.74	54.00	-10.26	AV
V	9648.00	50.25	30.85	7.45	24.69	51.54	74.00	-22.46	PK
V	9648.00	43.75	30.85	7.45	24.69	45.04	54.00	-8.96	AV
V	12060.00	52.80	31.02	8.99	25.57	56.34	74.00	-17.66	PK
V	12060.00	43.57	31.02	8.99	25.57	47.11	54.00	-6.89	AV
H	4824.00	51.14	30.55	5.77	24.66	51.02	74.00	-22.98	PK
H	4824.00	43.29	30.55	5.77	24.66	43.17	54.00	-10.83	AV
H	7236.00	53.83	30.33	6.32	24.55	54.37	74.00	-19.63	PK
H	7236.00	44.25	30.33	6.32	24.55	44.79	54.00	-9.21	AV
H	9648.00	52.39	30.85	7.45	24.69	53.68	74.00	-20.32	PK
H	9648.00	43.68	30.85	7.45	24.69	44.97	54.00	-9.03	AV
H	12060.00	53.07	31.02	8.99	25.57	56.61	74.00	-17.39	PK
H	12060.00	43.16	31.02	8.99	25.57	46.70	54.00	-7.30	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Middle Channel:2437MHz									
V	4874.00	51.83	30.55	5.77	24.66	51.71	74.00	-22.29	PK
V	4874.00	43.80	30.55	5.77	24.66	43.68	54.00	-10.32	AV
V	7311.00	51.69	30.33	6.32	24.55	52.23	74.00	-21.77	PK
V	7311.00	44.46	30.33	6.32	24.55	45.00	54.00	-9.00	AV
V	9748.00	51.23	30.85	7.45	24.69	52.52	74.00	-21.48	PK
V	9748.00	43.15	30.85	7.45	24.69	44.44	54.00	-9.56	AV
V	12185.00	53.33	31.02	8.99	25.57	56.87	74.00	-17.13	PK
V	12185.00	42.26	31.02	8.99	25.57	45.80	54.00	-8.20	AV
H	4874.00	51.53	30.55	5.77	24.66	51.41	74.00	-22.59	PK
H	4874.00	43.78	30.55	5.77	24.66	43.66	54.00	-10.34	AV
H	7311.00	55.48	30.33	6.32	24.55	56.02	74.00	-17.98	PK
H	7311.00	43.00	30.33	6.32	24.55	43.54	54.00	-10.46	AV
H	9748.00	50.23	30.85	7.45	24.69	51.52	74.00	-22.48	PK
H	9748.00	43.62	30.85	7.45	24.69	44.91	54.00	-9.09	AV
H	12185.00	53.71	31.02	8.99	25.57	57.25	74.00	-16.75	PK
H	12185.00	43.93	31.02	8.99	25.57	47.47	54.00	-6.53	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel:2462MHz									
V	4924.00	51.85	30.55	5.77	24.66	51.73	74.00	-22.27	PK
V	4924.00	43.03	30.55	5.77	24.66	42.91	54.00	-11.09	AV
V	7386.00	52.27	30.33	6.32	24.55	52.81	74.00	-21.19	PK
V	7386.00	43.52	30.33	6.32	24.55	44.06	54.00	-9.94	AV
V	9848.00	54.93	30.85	7.45	24.69	56.22	74.00	-17.78	PK
V	9848.00	43.72	30.85	7.45	24.69	45.01	54.00	-8.99	AV
V	12310.00	51.04	31.02	8.99	25.57	54.58	74.00	-19.42	PK
V	12310.00	43.16	31.02	8.99	25.57	46.70	54.00	-7.30	AV
H	4924.00	52.64	30.55	5.77	24.66	52.52	74.00	-21.48	PK
H	4924.00	44.14	30.55	5.77	24.66	44.02	54.00	-9.98	AV
H	7386.00	49.73	30.33	6.32	24.55	50.27	74.00	-23.73	PK
H	7386.00	43.70	30.33	6.32	24.55	44.24	54.00	-9.76	AV
H	9848.00	52.50	30.85	7.45	24.69	53.79	74.00	-20.21	PK
H	9848.00	43.24	30.85	7.45	24.69	44.53	54.00	-9.47	AV
H	12310.00	53.47	31.02	8.99	25.57	57.01	74.00	-16.99	PK
H	12310.00	42.85	31.02	8.99	25.57	46.39	54.00	-7.61	AV

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
4. The test data shows only the worst case.

5.RADIATED BAND EMISSIONMEASUREMENT

5.1 TEST REQUIREMENT:

Test Requirement:	FCC Part15 C Section 15.209 and 15.205
Test Method:	ANSI C63.10: 2013
Test Frequency Range:	All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed.
Test site:	Measurement Distance: 3m
Receiver setup:	

Frequency	Detector	RBW	VBW	Value
Above 1GHz	Peak	1MHz	3MHz	Peak
	Average	1MHz	3MHz	Average

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

5.2 TEST PROCEDURE

Above 1GHz test procedure as below:

a. 1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could bestopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dBmargin would be re-tested one by one using peak, quasi-peak or average method as specified and then reportedin a data sheet.

g. Test the EUT in the lowest channel,the Highest channel

Note:

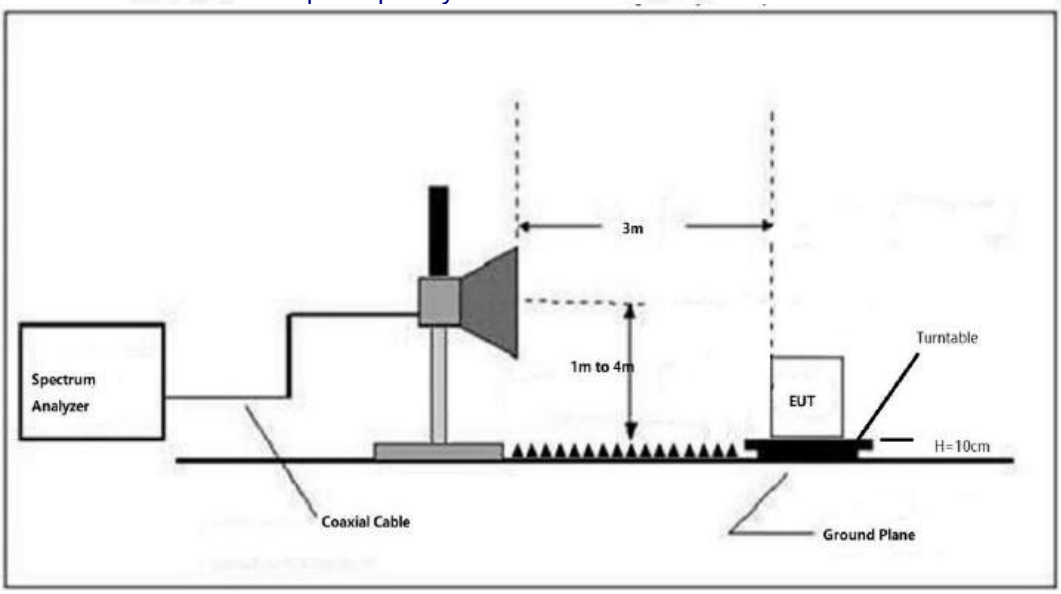
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

5.3 DEVIATION FROM TEST STANDARD

No deviation

5.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz



5.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

5.6 TEST RESULT

ANT1

	Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV/m)	Detector Type	Result
802.11b	Low Channel 2412MHz									
	H	2390.00	54.34	30.22	4.85	23.98	52.95	74.00	PK	PASS
	H	2390.00	44.84	30.22	4.85	23.98	43.45	54.00	AV	PASS
	H	2400.00	54.81	30.22	4.85	23.98	53.42	74.00	PK	PASS
	H	2400.00	44.15	30.22	4.85	23.98	42.76	54.00	AV	PASS
	V	2390.00	54.01	30.22	4.85	23.98	52.62	74.00	PK	PASS
	V	2390.00	44.32	30.22	4.85	23.98	42.93	54.00	AV	PASS
	V	2400.00	52.99	30.22	4.85	23.98	51.60	74.00	PK	PASS
	V	2400.00	44.52	30.22	4.85	23.98	43.13	54.00	AV	PASS
	High Channel 2462MHz									
	H	2483.50	54.62	30.22	4.85	23.98	53.23	74.00	PK	PASS
	H	2483.50	44.08	30.22	4.85	23.98	42.69	54.00	AV	PASS
	H	2500.00	53.66	30.22	4.85	23.98	52.27	74.00	PK	PASS
	H	2500.00	44.37	30.22	4.85	23.98	42.98	54.00	AV	PASS
	V	2483.50	53.24	30.22	4.85	23.98	51.85	74.00	PK	PASS
	V	2483.50	44.26	30.22	4.85	23.98	42.87	54.00	AV	PASS
	V	2500.00	55.41	30.22	4.85	23.98	54.02	74.00	PK	PASS
	V	2500.00	44.49	30.22	4.85	23.98	43.10	54.00	AV	PASS
802.11g	Low Channel 2412MHz									
	H	2390.00	53.45	30.22	4.85	23.98	52.06	74.00	PK	PASS
	H	2390.00	44.11	30.22	4.85	23.98	42.72	54.00	AV	PASS
	H	2400.00	54.66	30.22	4.85	23.98	53.27	74.00	PK	PASS
	H	2400.00	44.73	30.22	4.85	23.98	43.34	54.00	AV	PASS
	V	2390.00	53.72	30.22	4.85	23.98	52.33	74.00	PK	PASS
	V	2390.00	44.78	30.22	4.85	23.98	43.39	54.00	AV	PASS
	V	2400.00	54.11	30.22	4.85	23.98	52.72	74.00	PK	PASS
	V	2400.00	44.42	30.22	4.85	23.98	43.03	54.00	AV	PASS
	High Channel 2462MHz									
	H	2483.50	53.70	30.22	4.85	23.98	52.31	74.00	PK	PASS
	H	2483.50	44.08	30.22	4.85	23.98	42.69	54.00	AV	PASS
	H	2500.00	53.53	30.22	4.85	23.98	52.14	74.00	PK	PASS
	H	2500.00	44.82	30.22	4.85	23.98	43.43	54.00	AV	PASS
	V	2483.50	54.28	30.22	4.85	23.98	52.89	74.00	PK	PASS
	V	2483.50	44.08	30.22	4.85	23.98	42.69	54.00	AV	PASS
	V	2500.00	52.85	30.22	4.85	23.98	51.46	74.00	PK	PASS
	V	2500.00	44.13	30.22	4.85	23.98	42.74	54.00	AV	PASS

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limi

ANT2

	Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV/m)	Detector Type	Result
802.11b	Low Channel 2412MHz									
	H	2390.00	54.34	30.22	4.85	23.98	52.95	74.00	PK	PASS
	H	2390.00	44.84	30.22	4.85	23.98	43.45	54.00	AV	PASS
	H	2400.00	54.81	30.22	4.85	23.98	53.42	74.00	PK	PASS
	H	2400.00	44.15	30.22	4.85	23.98	42.76	54.00	AV	PASS
	V	2390.00	54.01	30.22	4.85	23.98	52.62	74.00	PK	PASS
	V	2390.00	44.32	30.22	4.85	23.98	42.93	54.00	AV	PASS
	V	2400.00	52.99	30.22	4.85	23.98	51.60	74.00	PK	PASS
	V	2400.00	44.52	30.22	4.85	23.98	43.13	54.00	AV	PASS
	High Channel 2462MHz									
	H	2483.50	54.62	30.22	4.85	23.98	53.23	74.00	PK	PASS
	H	2483.50	44.08	30.22	4.85	23.98	42.69	54.00	AV	PASS
	H	2500.00	53.66	30.22	4.85	23.98	52.27	74.00	PK	PASS
	H	2500.00	44.37	30.22	4.85	23.98	42.98	54.00	AV	PASS
	V	2483.50	53.24	30.22	4.85	23.98	51.85	74.00	PK	PASS
	V	2483.50	44.26	30.22	4.85	23.98	42.87	54.00	AV	PASS
	V	2500.00	55.41	30.22	4.85	23.98	54.02	74.00	PK	PASS
	V	2500.00	44.49	30.22	4.85	23.98	43.10	54.00	AV	PASS
802.11g	Low Channel 2412MHz									
	H	2390.00	53.45	30.22	4.85	23.98	52.06	74.00	PK	PASS
	H	2390.00	44.11	30.22	4.85	23.98	42.72	54.00	AV	PASS
	H	2400.00	54.66	30.22	4.85	23.98	53.27	74.00	PK	PASS
	H	2400.00	44.73	30.22	4.85	23.98	43.34	54.00	AV	PASS
	V	2390.00	53.72	30.22	4.85	23.98	52.33	74.00	PK	PASS
	V	2390.00	44.78	30.22	4.85	23.98	43.39	54.00	AV	PASS
	V	2400.00	54.11	30.22	4.85	23.98	52.72	74.00	PK	PASS
	V	2400.00	44.42	30.22	4.85	23.98	43.03	54.00	AV	PASS
	High Channel 2462MHz									
	H	2483.50	53.70	30.22	4.85	23.98	52.31	74.00	PK	PASS
	H	2483.50	44.08	30.22	4.85	23.98	42.69	54.00	AV	PASS
	H	2500.00	53.53	30.22	4.85	23.98	52.14	74.00	PK	PASS
	H	2500.00	44.82	30.22	4.85	23.98	43.43	54.00	AV	PASS
	V	2483.50	54.28	30.22	4.85	23.98	52.89	74.00	PK	PASS
	V	2483.50	44.08	30.22	4.85	23.98	42.69	54.00	AV	PASS
	V	2500.00	52.85	30.22	4.85	23.98	51.46	74.00	PK	PASS
	V	2500.00	44.13	30.22	4.85	23.98	42.74	54.00	AV	PASS

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limi

802.11n20(MIMO)

802.11n20	Low Channel 2412MHz									
	H	2390.00	53.33	30.22	4.85	23.98	51.94	74.00	PK	PASS
	H	2390.00	44.68	30.22	4.85	23.98	43.29	54.00	AV	PASS
	H	2400.00	54.43	30.22	4.85	23.98	53.04	74.00	PK	PASS
	H	2400.00	44.55	30.22	4.85	23.98	43.16	54.00	AV	PASS
	V	2390.00	54.46	30.22	4.85	23.98	53.07	74.00	PK	PASS
	V	2390.00	44.53	30.22	4.85	23.98	43.14	54.00	AV	PASS
	V	2400.00	54.67	30.22	4.85	23.98	53.28	74.00	PK	PASS
	V	2400.00	44.13	30.22	4.85	23.98	42.74	54.00	AV	PASS
	High Channel 2462MHz									
	H	2483.50	53.07	30.22	4.85	23.98	51.68	74.00	PK	PASS
	H	2483.50	44.94	30.22	4.85	23.98	43.55	54.00	AV	PASS
	H	2500.00	53.49	30.22	4.85	23.98	52.10	74.00	PK	PASS
	H	2500.00	44.32	30.22	4.85	23.98	42.93	54.00	AV	PASS
	V	2483.50	53.75	30.22	4.85	23.98	52.36	74.00	PK	PASS
	V	2483.50	44.52	30.22	4.85	23.98	43.13	54.00	AV	PASS
	V	2500.00	53.87	30.22	4.85	23.98	52.48	74.00	PK	PASS
	V	2500.00	44.14	30.22	4.85	23.98	42.75	54.00	AV	PASS

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit

802.11n40	Low Channel 2422MHz									
	H	2390.00	53.39	30.22	4.85	23.98	52.00	74.00	PK	PASS
	H	2390.00	44.89	30.22	4.85	23.98	43.50	54.00	AV	PASS
	H	2400.00	53.94	30.22	4.85	23.98	52.55	74.00	PK	PASS
	H	2400.00	44.69	30.22	4.85	23.98	43.30	54.00	AV	PASS
	V	2390.00	53.96	30.22	4.85	23.98	52.57	74.00	PK	PASS
	V	2390.00	44.88	30.22	4.85	23.98	43.49	54.00	AV	PASS
	V	2400.00	54.50	30.22	4.85	23.98	53.11	74.00	PK	PASS
	V	2400.00	44.05	30.22	4.85	23.98	42.66	54.00	AV	PASS
	High Channel 2452MHz									
	H	2483.50	53.21	30.22	4.85	23.98	51.82	74.00	PK	PASS
	H	2483.50	45.24	30.22	4.85	23.98	43.85	54.00	AV	PASS
	H	2500.00	53.69	30.22	4.85	23.98	52.30	74.00	PK	PASS
	H	2500.00	44.12	30.22	4.85	23.98	42.73	54.00	AV	PASS
	V	2483.50	53.41	30.22	4.85	23.98	52.02	74.00	PK	PASS
	V	2483.50	44.35	30.22	4.85	23.98	42.96	54.00	AV	PASS
	V	2500.00	53.73	30.22	4.85	23.98	52.34	74.00	PK	PASS
	V	2500.00	44.22	30.22	4.85	23.98	42.83	54.00	AV	PASS

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit

6.POWER SPECTRAL DENSITY TEST

Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	ANSI C63.10:2013 and KDB558074 D01DTS Meas Guidancev05r02

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8dBm/3kHz	2400-2483.5	PASS

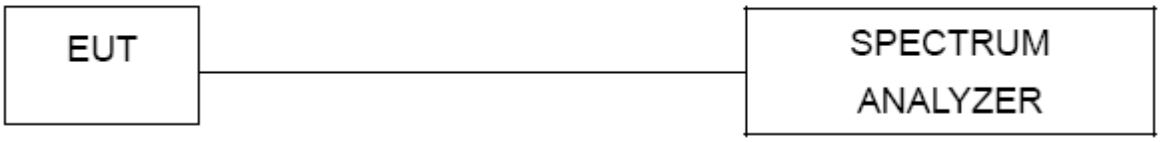
6.2 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
4. Set the VBW ≥ 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

6.6 TEST RESULT

Temperature：	26℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	AC 230V/60Hz

TestMode	Antenna	Frequency[MHz]	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	7.64	≤8.00	PASS
	Ant2	2412	5.63	≤8.00	PASS
	Ant1	2437	7.13	≤8.00	PASS
	Ant2	2437	4.47	≤8.00	PASS
	Ant1	2462	6.88	≤8.00	PASS
	Ant2	2462	4.94	≤8.00	PASS
11G	Ant1	2412	-6.22	≤8.00	PASS
	Ant2	2412	-8.2	≤8.00	PASS
	Ant1	2437	-6.22	≤8.00	PASS
	Ant2	2437	-9.61	≤8.00	PASS
	Ant1	2462	-7.35	≤8.00	PASS
	Ant2	2462	-9.03	≤8.00	PASS
11N20MIMO	Ant1	2412	-7.54	≤8.00	PASS
	Ant2	2412	-9.97	≤8.00	PASS
	total	2412	-5.58	≤8.00	PASS
	Ant1	2437	-7.38	≤8.00	PASS
	Ant2	2437	-10.64	≤8.00	PASS
	total	2437	-5.70	≤8.00	PASS
	Ant1	2462	-8.27	≤8.00	PASS
	Ant2	2462	-10.52	≤8.00	PASS
	total	2462	-6.24	≤8.00	PASS
11N40MIMO	Ant1	2422	-10.49	≤8.00	PASS
	Ant2	2422	-12.85	≤8.00	PASS
	total	2422	-8.50	≤8.00	PASS
	Ant1	2437	-11.57	≤8.00	PASS
	Ant2	2437	-14.22	≤8.00	PASS
	total	2437	-9.69	≤8.00	PASS
	Ant1	2452	-11.14	≤8.00	PASS
	Ant2	2452	-13.91	≤8.00	PASS
	total	2452	-9.30	≤8.00	PASS

11B_Ant1_2412

11B_Ant2_2412

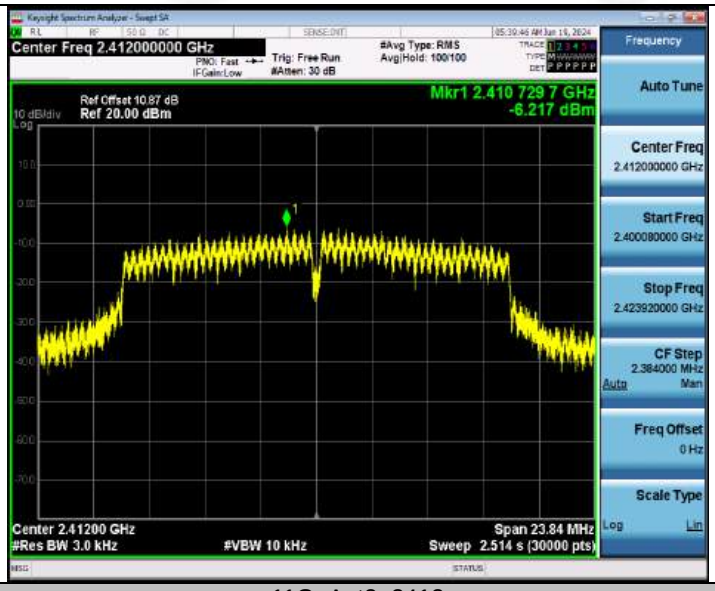
11B_Ant1_2437

11B_Ant2_2437

11B_Ant1_2462

11B_Ant2_2462

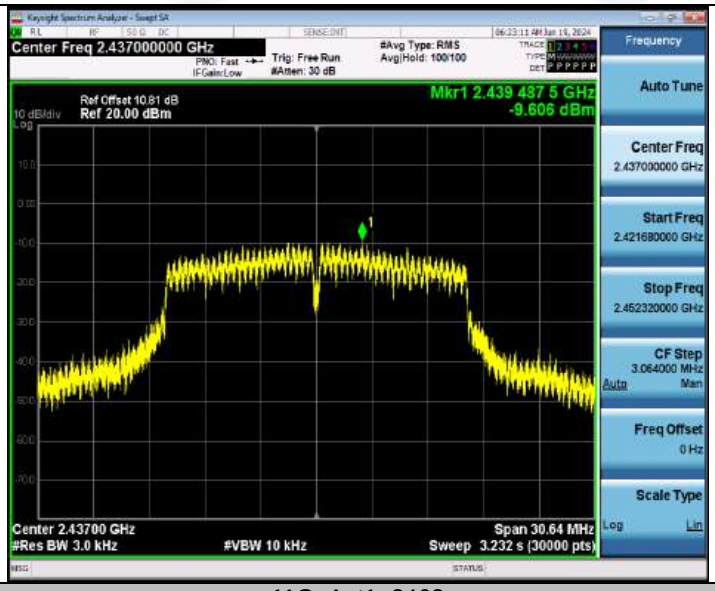
11G_Ant1_2412



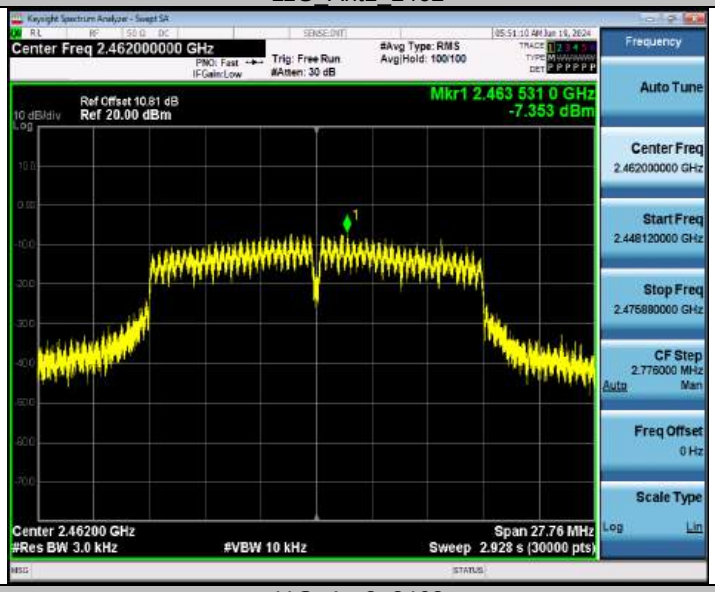
11G_Ant2_2412

11G_Ant1_2437

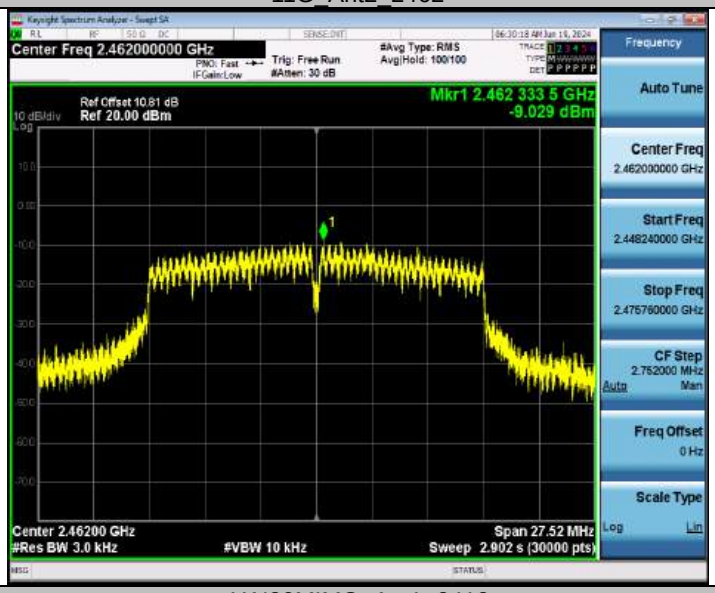
11G_Ant2_2437



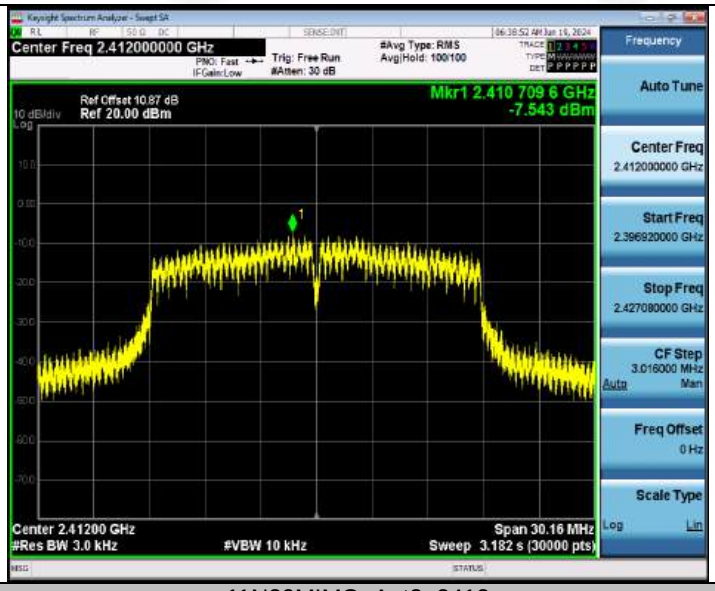
11G_Ant1_2462



11G_Ant2_2462

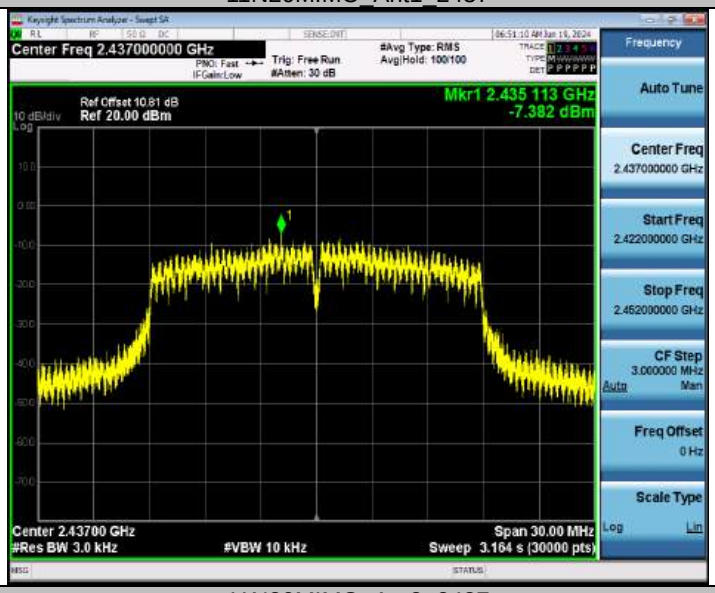


11N20MIMO_Ant1_2412



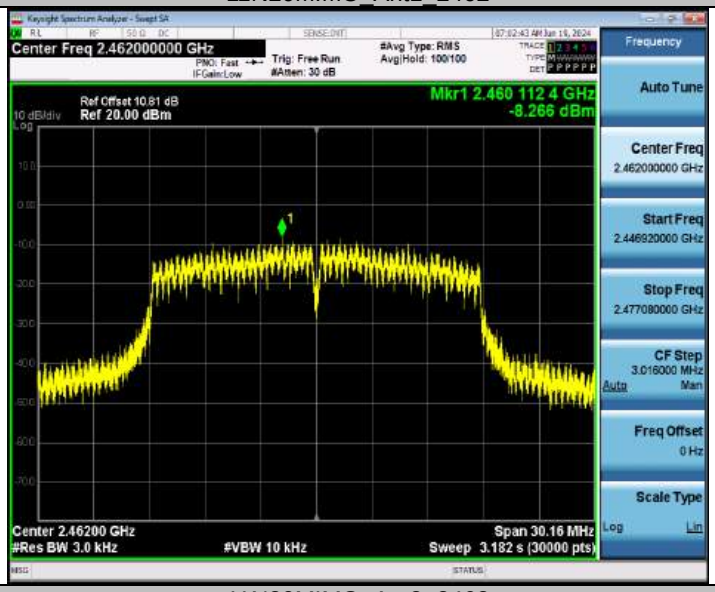
11N20MIMO_Ant2_2412

11N20MIMO_Ant1_2437



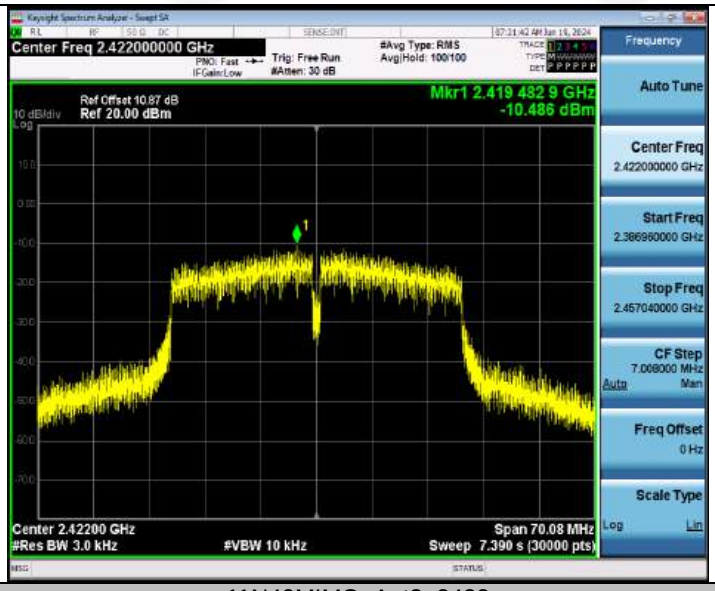
11N20MIMO_Ant2_2437

11N20MIMO_Ant1_2462

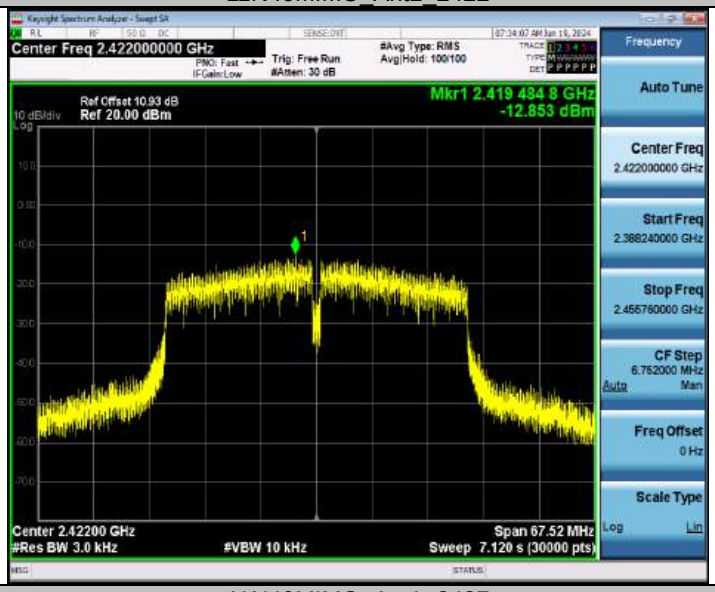


11N20MIMO_Ant2_2462

11N40MIMO_Ant1_2422

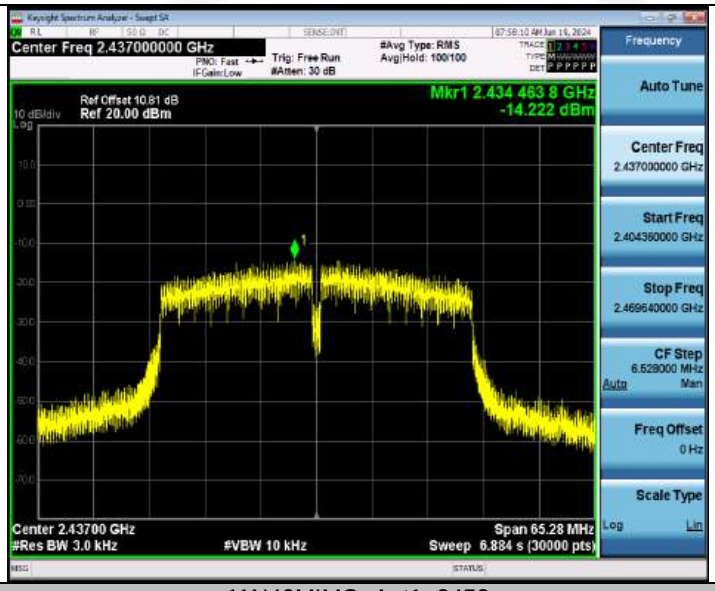


11N40MIMO_Ant2_2422

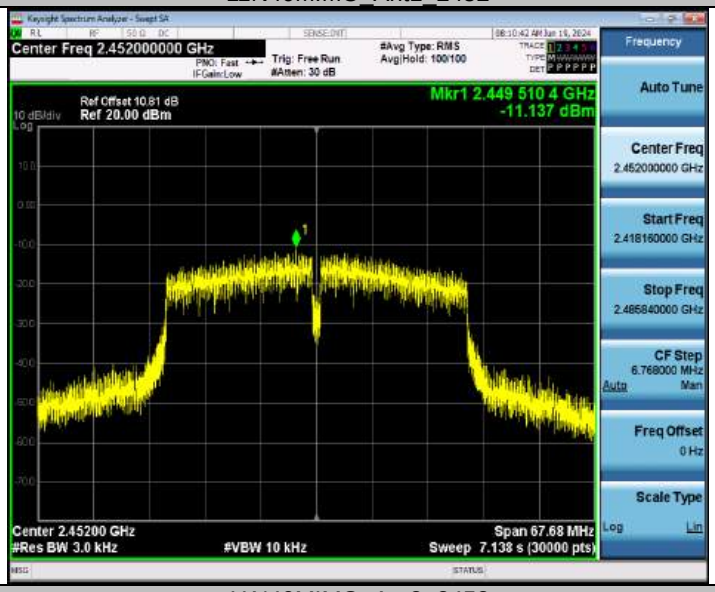


11N40MIMO_Ant1_2437

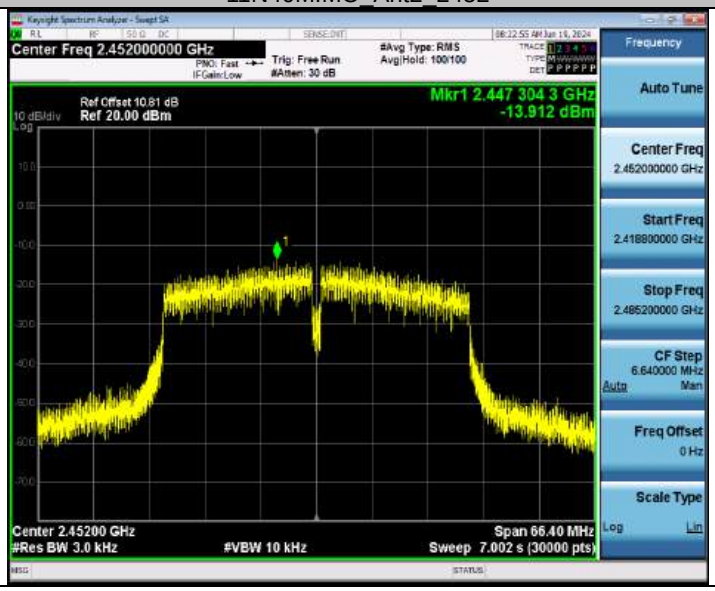
11N40MIMO_Ant2_2437



11N40MIMO_Ant1_2452



11N40MIMO_Ant2_2452



7. CHANNEL BANDWIDTH& 99% OCCUPY BANDWIDTH

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.10:2013 and KDB558074 D01DTS Meas Guidancev05r02

7.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	>= 500KHz (6dB bandwidth)	2400-2483.5	PASS

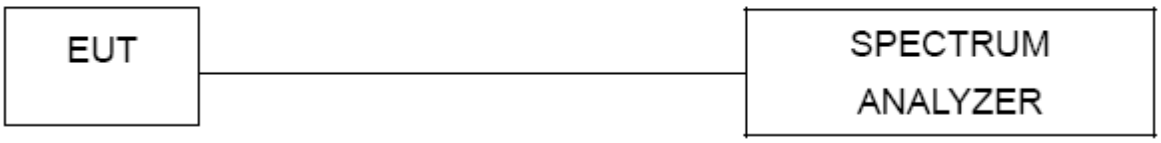
7.2 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 xRBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.6 TEST RESULT

Temperature：	26℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	AC 230V/60Hz

TestMode	Antenna	Channel Frequency[MHz]	6dB Bandedge [MHz]	Result
11B	Ant1	2412	9.566	Pass
	Ant2	2412	9.574	Pass
	Ant1	2437	9.590	Pass
	Ant2	2437	10.05	Pass
	Ant1	2462	9.602	Pass
	Ant2	2462	9.583	Pass
11G	Ant1	2412	13.21	Pass
	Ant2	2412	14.19	Pass
	Ant1	2437	14.47	Pass
	Ant2	2437	13.83	Pass
	Ant1	2462	15.75	Pass
	Ant2	2462	15.43	Pass
11N20MIMO	Ant1	2412	13.90	Pass
	Ant2	2412	16.30	Pass
	Ant1	2437	13.80	Pass
	Ant2	2437	15.72	Pass
	Ant1	2462	12.95	Pass
	Ant2	2462	15.07	Pass
11N40MIMO	Ant1	2422	33.80	Pass
	Ant2	2422	33.91	Pass
	Ant1	2437	33.90	Pass
	Ant2	2437	32.59	Pass
	Ant1	2452	35.08	Pass
	Ant2	2452	35.13	Pass

Test plot as follows:

11B_Ant1_2412

11B_Ant2_2412

11B_Ant1_2437

11B_Ant2_2437

11B_Ant1_2462

11B_Ant2_2462

11G_Ant1_2412

11G_Ant2_2412

11G_Ant1_2437

11G_Ant2_2437

11G_Ant1_2462

11G_Ant2_2462

11N20MIMO_Ant1_2412

11N20MIMO_Ant2_2412

11N20MIMO_Ant1_2437

11N20MIMO_Ant2_2437

11N20MIMO_Ant1_2462

11N20MIMO_Ant2_2462

11N40MIMO_Ant1_2422

11N40MIMO_Ant2_2422

11N40MIMO_Ant1_2437

11N40MIMO_Ant2_2437

11N40MIMO_Ant1_2452

11N40MIMO_Ant2_2452

8.PEAK OUTPUT POWER TEST

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.10:2013 and KDB558074 D01DTS Meas Guidancev05r02

8.1 APPLIED PROCEDURES/LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

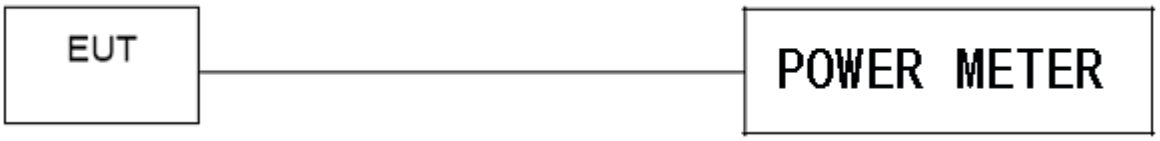
8.2 TEST PROCEDURE

a. The EUT was directly connected to the Power meter

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP



8.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

8.6 TEST RESULT

Temperature：	26℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	AC 230V/60Hz

Test Mode	Antenna	Frequency [MHz]	Peak Powert[dBm]	Result [dBm]	Limit [dBm]	Directional gain [dBm]	Verdict
11B	Ant1	2412	21.05	21.05	≤30.00	2.0	PASS
	Ant2	2412	18.76	18.76	≤30.00	2.0	PASS
	Ant1	2437	20.47	20.47	≤30.00	2.0	PASS
	Ant2	2437	17.71	17.71	≤30.00	2.0	PASS
	Ant1	2462	20.12	20.12	≤30.00	2.0	PASS
	Ant2	2462	18.25	18.25	≤30.00	2.0	PASS
11G	Ant1	2412	25.63	25.63	≤30.00	2.0	PASS
	Ant2	2412	23.26	23.26	≤30.00	2.0	PASS
	Ant1	2437	25.73	25.73	≤30.00	2.0	PASS
	Ant2	2437	23.08	23.08	≤30.00	2.0	PASS
	Ant1	2462	25.14	25.14	≤30.00	2.0	PASS
	Ant2	2462	23.40	23.40	≤30.00	2.0	PASS
11N20MIMO	Ant1	2412	24.43	24.43	≤30.00	2.0	PASS
	Ant2	2412	22.90	22.90	≤30.00	2.0	PASS
	total	2412	---	26.74	≤30.00	5.01	PASS
	Ant1	2437	23.90	23.90	≤30.00	2.0	PASS
	Ant2	2437	21.62	21.62	≤30.00	2.0	PASS
	total	2437	---	25.92	≤30.00	5.01	PASS
	Ant1	2462	23.65	23.65	≤30.00	2.0	PASS
	Ant2	2462	22.19	22.19	≤30.00	2.0	PASS
	total	2462	---	25.99	≤30.00	5.01	PASS
11N40MIMO	Ant1	2422	23.94	23.94	≤30.00	2.0	PASS
	Ant2	2422	22.14	22.14	≤30.00	2.0	PASS
	total	2422	---	26.14	≤30.00	5.01	PASS
	Ant1	2437	23.33	23.33	≤30.00	2.0	PASS
	Ant2	2437	20.92	20.92	≤30.00	2.0	PASS
	total	2437	---	25.30	≤30.00	5.01	PASS
	Ant1	2452	23.41	23.41	≤30.00	2.0	PASS
	Ant2	2452	20.89	20.89	≤30.00	2.0	PASS
	total	2452	---	25.34	≤30.00	5.01	PASS

Directional gain = GANT + Array Gain=2.0 *dB*i+3.01 *dB*i =5.01 *dB*i；

Array Gain = 10 log(NANT/NSS) dB （NANT=2;NSS=1）

9. CONDUCTED BAND EDGE AND SPURIOUS EMISSION

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013 and KDB558074 D01DTS Meas Guidancev05r02

9.1 APPLICABLE STANDARD

in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in§15.205(a), must also comply with the radiated emission limits specified in15.209(a).

9.2 TEST PROCEDURE

Using the following spectrum analyzer setting:

A) Set the RBW = 100KHz.
B) Set the VBW = 300KHz.
C) Sweep time = auto couple.
D) Detector function = peak.
E) Trace mode = max hold.
F) Allow trace to fully stabilize.

9.3 DEVIATION FROM STANDARD

No deviation.

9.4 TEST SETUP

9.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

9.6 TEST RESULTS

Temperature：	26℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	AC 230V/60Hz

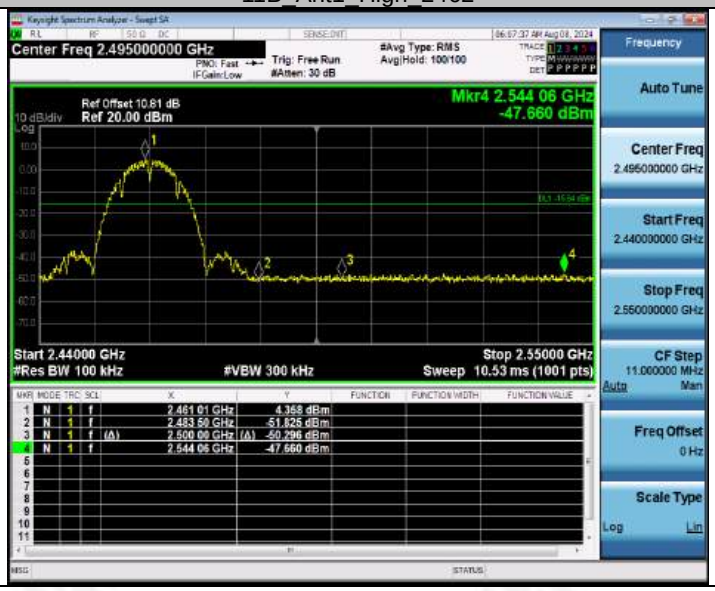
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	5.33	-34.01	≤-14.67	PASS
	Ant2	Low	2412	4.66	-39.67	≤-15.34	PASS
	Ant1	High	2462	4.36	-47.66	≤-15.64	PASS
	Ant2	High	2462	4.19	-47.44	≤-15.81	PASS
11G	Ant1	Low	2412	3.10	-28.34	≤-16.9	PASS
	Ant2	Low	2412	3.04	-31.99	≤-16.96	PASS
	Ant1	High	2462	3.03	-45.04	≤-16.97	PASS
	Ant2	High	2462	2.72	-45.8	≤-17.29	PASS
11N20MIMO	Ant1	Low	2412	3.53	-26.54	≤-16.47	PASS
	Ant2	Low	2412	3.87	-29.5	≤-16.13	PASS
	Ant1	High	2462	4.22	-43.72	≤-15.78	PASS
	Ant2	High	2462	1.68	-44.45	≤-18.32	PASS
11N40MIMO	Ant1	Low	2422	1.17	-30.6	≤-18.83	PASS
	Ant2	Low	2422	0.53	-33.76	≤-19.48	PASS
	Ant1	High	2452	0.01	-36.4	≤-19.99	PASS
	Ant2	High	2452	-0.44	-41.96	≤-20.44	PASS

Test plot as follows:

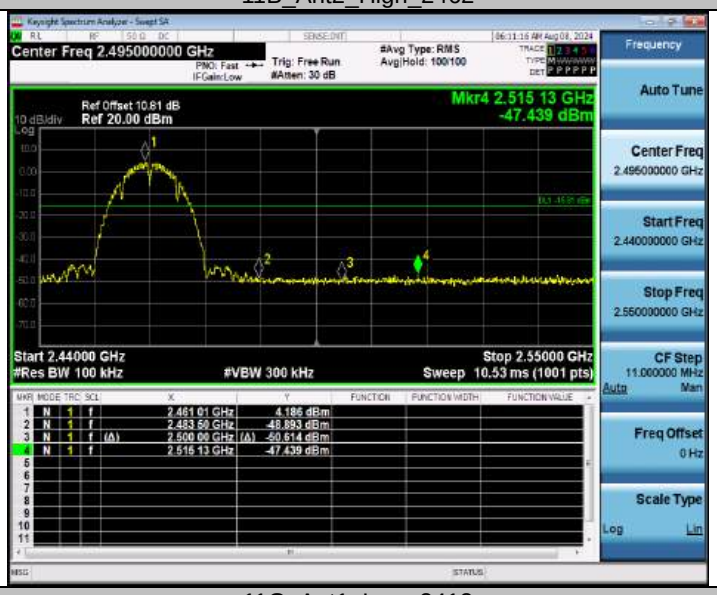
11B_Ant1_Low_2412

11B_Ant2_Low_2412

11B_Ant1_High_2462



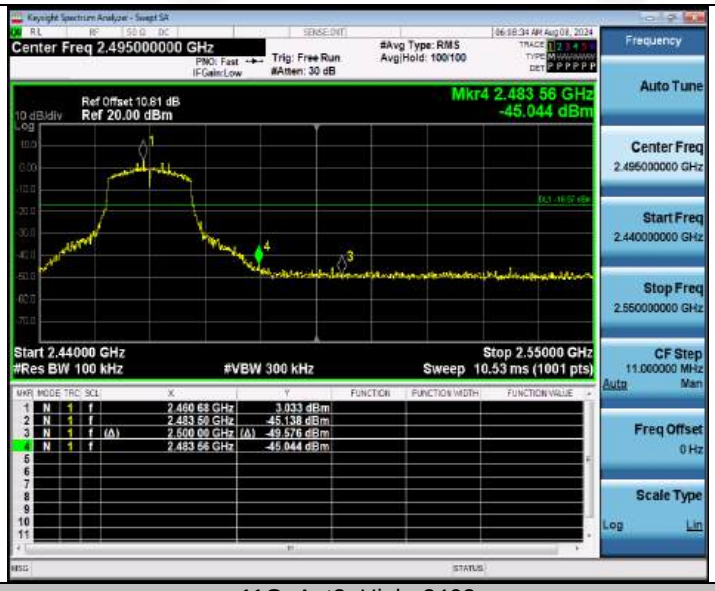
11B_Ant2_High_2462



11G_Ant1_Low_2412

11G_Ant2_Low_2412

11G_Ant1_High_2462

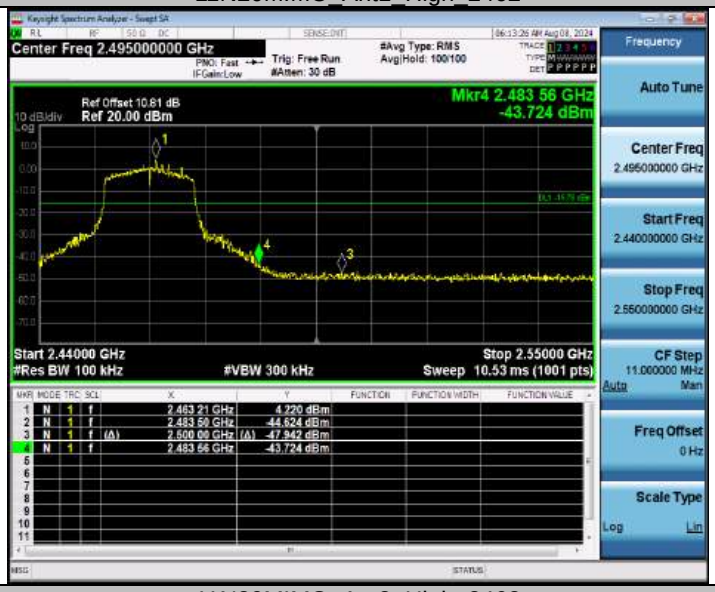


11G_Ant2_High_2462

11N20MIMO_Ant1_Low_2412

11N20MIMO_Ant2_Low_2412

11N20MIMO_Ant1_High_2462



11N20MIMO_Ant2_High_2462

11N40MIMO_Ant1_Low_2422

11N40MIMO_Ant2_Low_2422

11N40MIMO_Ant1_High_2452

11N40MIMO_Ant2_High_2452

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.495000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 100/100
Ref Offset 10.61 dB
10 dB/div Ref 20.00 dBm
Mkr4 2.484 55 GHz
-41.962 dBm
Start 2.44000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.55000 GHz
Sweep 10.53 ms (1001 pts)
1 N 1 f 2.446 93 GHz -0.442 dBm
2 N 1 f 2.483 50 GHz -44.158 dBm
3 N 1 f (Δ) 2.500 00 GHz (Δ) -49.973 dBm
4 N 1 f 2.484 55 GHz -41.962 dBm
Frequency
Auto Tune
Center Freq
2.495000000 GHz
Start Freq
2.440000000 GHz
Stop Freq
2.550000000 GHz
CF Step
11.000000 MHz
Auto Man
Freq Offset
0 Hz
Scale Type
Log Lin

10. DUTY CYCLE

Test Method:	ANSI C63.10:2013

10.1 APPLIED PROCEDURES / LIMIT

Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:

a) A diode detector and an oscilloscope that together have a sufficiently short response time to permit accurate measurements of the ON and OFF times of the transmitted signal.

b) The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:

1) Set the center frequency of the instrument to the center frequency of the transmission.

2) Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value.

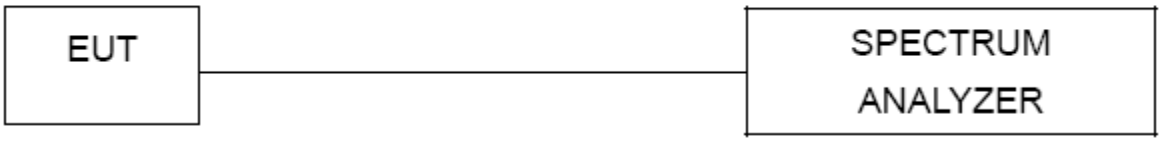
3) Set VBW ≥ RBW. Set detector = peak or average.

4) The zero-span measurement method shall not be used unless both RBW and VBW are > 50/*T* and the number of sweep points across duration *T* exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring the duty cycle shall not be used if $T \leq 16.7$ µs.)

10.2 DEVIATION FROM STANDARD

No deviation.

10.3 TEST SETUP

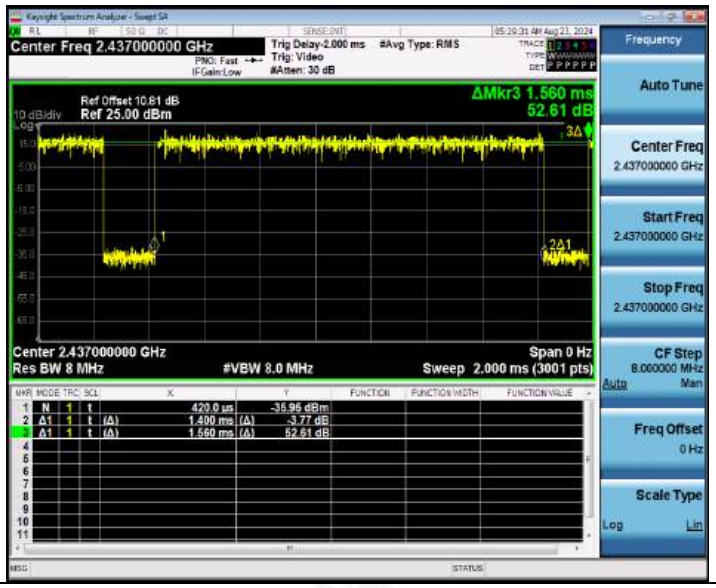


10.4 TEST RESULTS

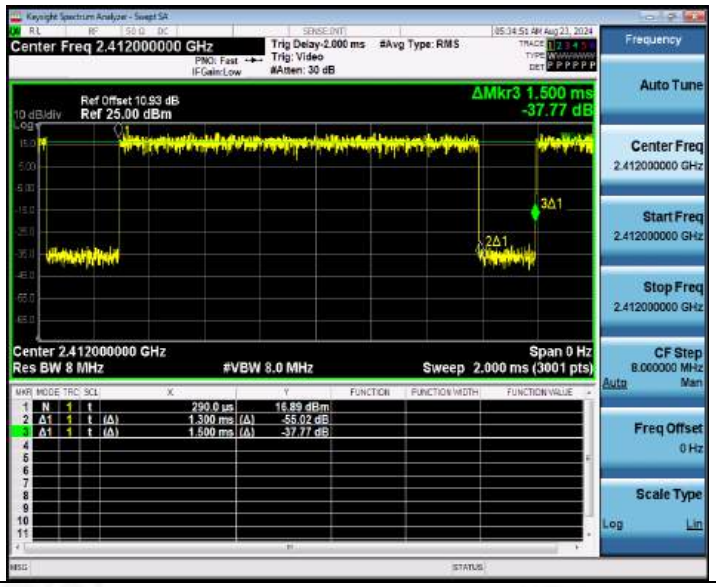
Mode	Frequency (MHz)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Result
802.11b ant 1	2412	97.0	0.13	Pass
802.11g ant 1	2437	89.74	0.47	Pass
802.11n20 ant 1	2412	86.67	0.62	Pass
802.11n40 ant 1	2422	77.78	1.09	Pass

802.11b 2412MHz

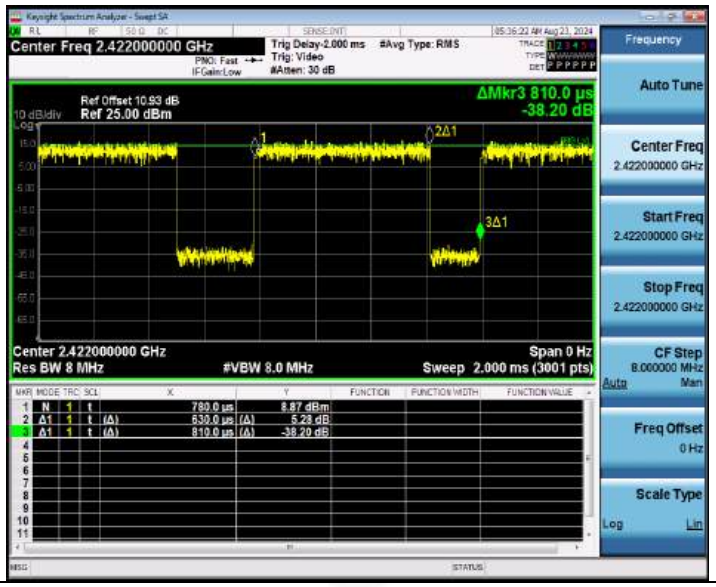
802.11g 2437MHz



802.11n20 2412MHz



802.11n40	2422MHz



Note: All channel and ant have been tested, and the report only reflects the worst case data.
Duty Cycle= Ton /Total*100%
Duty Cycle Correction Factor = 10log (1/Duty Cycle)

11. ANTENNA REQUIREMENT

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi. A transmitter can only be sold or operated with antennas with which it was approved.	
EUT Antenna:	
The antenna is FPC Antenna, the best case gain of the antenna is 2dBi, reference to the appendix II for details	

12. TEST SETUP PHOTO

Reference to the appendix I for details.

13. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

※※※※※ END OF REPORT ※※※※※